THE NEUTRALITY PYRAMID

A POLICY FRAMEWORK TO DISTRIBUTE POWER OVER THE NET

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Abstract

The internet used to be considered as a catalyst of positive social change. Yet such claims have become rare. Why were the Arab Spring, Occupy Wall Street, and the Spanish 15M movement hailed as examples of the internet delivering on its promise but the 2016 US presidential election and Brexit seen as the internet delivering nightmares?

Structured as a document for action in four steps, this report seeks to provide a rough compass for those trying to understand the underlying causes of much of what is problematic with the internet and the web today. I argue that paying attention to *who* shapes internet traffic (and *how*) is crucial. It will allow us to understand the connection between issues often considered unrelated (such as net neutrality and misinformation), as well as to anticipate challenges that are yet to emerge.

In Step 1, I describe how the inventors and developers of the internet and the web upheld the principle of decentralization to ensure the network was robust in the face of failure, and how this sparked hope for systematically excluded groups that had long been marginalized from public debate. I then describe four types of problems for which the web is often considered responsible, and explain the subset of these that I believe can be resolved through digital policies, narrowing the scope of this report to the issue of centralization.

In Step 2, I describe how the internet and the web have been centralized. I explain how, given the characteristics of the process of centralization, the ongoing deployment of connected devices (also known as *internet of things*), as well as the growing developments in the fields of augmented reality and virtual reality are likely going to fuel the process of centralization further. Lastly, focusing on search and person-to-person communications, I explore the types of risks centralization poses to the present and future of our political system.

In Step 3, I present the Neutrality Pyramid, a framework around which we can rally to neutralize the process of centralization and reduce the scope of power of the incumbent gatekeepers. After explaining how and why the framework builds upon and extends the definition of net neutrality to other layers of the stack, I describe the technological, regulatory and activist actions taking place around the globe to forward and enforce the principles of net neutrality, device neutrality, platform neutrality and personal control over personal data.

In Step 4, I go beyond negative actions and explain how the Neutrality Pyramid can enable the development of a positive agenda. I explain that even though the neutrality principle presupposes a hands-off approach, it does include a set of exceptions enshrined by law. I argue that we should leverage the process of defining such exceptions as a means to ensure the institutions of democracy play a role in guiding the process of development of the internet, and I suggest some of the key questions public officials need to put forward. This section then discusses the development of public infrastructure and services as a way to bake democratic institutions into the growing digital sphere.

In the Conclusion, I outline the backdrop of weakened governments and global institutions of governance in which the upcoming debates regarding digital policy will take place, and the challenges the cold war discourse, with its militaristic undertones, poses in this context.

Step 1 — Understanding the context: How the internet came to be seated on the defendant's bench

Understanding the architecture

The *inter-net* is a network of networks. As such, it offered a revolutionary way of distributing information. Unlike the telephone, the internet never required a central operating room with dozens of people connecting cables to enable conversations.

Figure 1 — A Switchboard (via AP Photo)

On the internet, points of interconnection are distributed across the network. Each node can help route the components of a message to its destination. None of the nodes is central. None is essential. There is no single point of failure.

For example, as shown in Fig. 2, if in 1971 the UCLA node were to crash, Stanford could still communicate with the University of California at Santa Barbara (UCSB) by routing through NASA's Ames Research Center. None of these nodes played a role as central as the switchboard in telephone communications.

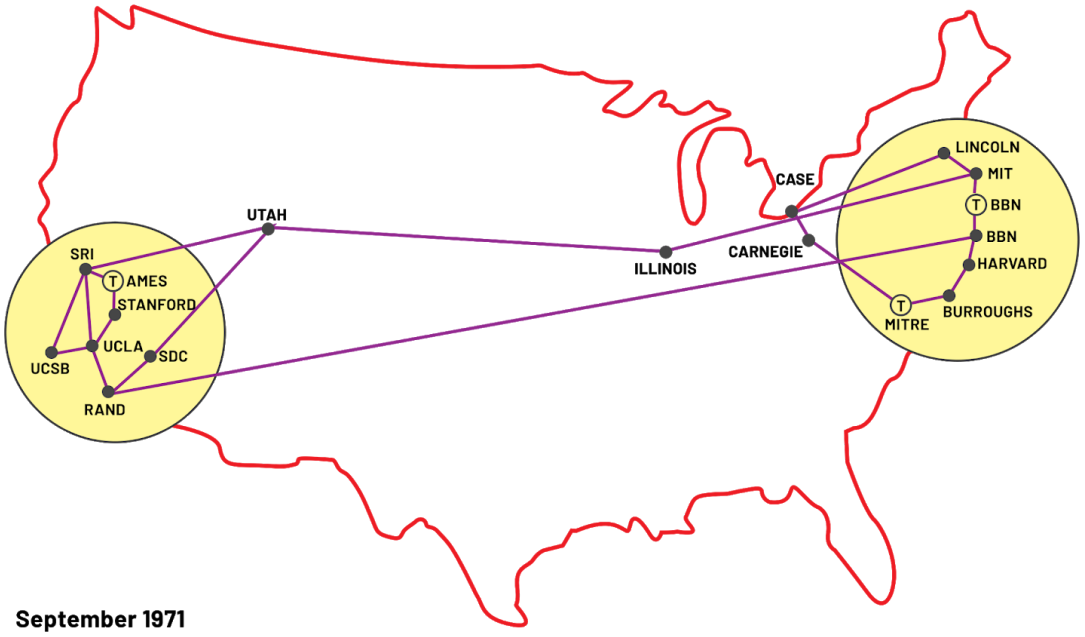

Figure 2— ArpaNet 1971 (Adapted from Red Hat Linux Test Page)

In principle, the more nodes that join the network, the more robust the network becomes, and the greater the chances of getting a message from one point to another. That is, in synthesis, why a decentralized system was so appealing: as opposed to a centralized system, scale does not increase risk – it actually makes the network more resilient.[1][2]

1989: Enter the Web

These architectural principles inspired (and were later upheld by) Tim Berners-Lee, when in 1989 he designed the web – the key content layer that sits on top of the internet. This was achieved through a series of decisions. First, as part of the Web's features, Berners-Lee chose to implement the hyperlink in such a way that any and all websites could link to any and all websites. And so, like the nodes on the internet, all websites were created equal, as were all links.[3] Second, in 1993, Tim Berners-Lee convinced CERN to release the web into the public domain.[4] He believed everyone should be allowed to use it[5]: Today, anyone can set up a website without needing permission from him . . . or anyone else. Third, in 1994, he founded the World Wide Web Consortium to ensure the web standards would be defined

[1] See John Naughton, *A Brief History of the Future* (Orion, 2015). Pg 109 and
[2] Barbara van Schewick, *Internet Architecture and Innovation* (Cambridge, UNITED STATES: MIT Press, 2010), http://ebookcentral.proquest.com/lib/socal/detail.action?docID=3339149. Chap. 2.
[3] Tim Berners-Lee, "Realising the Full Potential of the Web," December 3, 1997, https://www.w3.org/1998/02/Potential.html.
[4] CERN, *Software Release of WWW into Public Domain*, 1993, https://cds.cern.ch/record/1164399?ln=en#.
[5] "Sir Tim Berners-Lee's 2012 Olympic Tweet: This Is For Everyone.," World Wide Web Foundation, July 27, 2012, https://webfoundation.org/2012/07/sir-tim-berners-lee-closes-out-2012-olympic-opening-ceremony-this-is-for-everyone-one-web/.

through consensus,[6] following the model that had been previously adopted by the internet pioneers for the open protocols in the late 1980s.

The sum of these decisions meant that, on top of the *architectural decentralization* that the internet infrastructure provided (no node is essential for a message to travel across the network), Berners-Lee offered *organizational decentralization* for decisions regarding the content that would be produced and consumed: no single person or institution has the power to define *what gets published online*, and it's up to those on the internet to share links that point others to the content they want people to read.[7] Virality can emerge as a consequence of many active choices.

In short, both the internet and the web were purposefully designed as non-hierarchical, decentralized systems. There was no choke point. These were dependable systems you could bank on (pun intended).[8]

The power of decentralization

Beyond being merely *dependable*, and understanding that information is power, the growth of a decentralized information management system triggered great expectations regarding its potential to fuel movements for social justice.

When systematically excluded groups came online, they began voicing the thoughts that had previously been silenced or ignored by previous brokers of communication, such as governments and traditional mass media.[9] These groups started telling their personal stories. Patterns started to become visible. Problems typically framed as isolated cases became more openly perceived and discussed as systemic problems that required systemic solutions (e.g., #meToo[10] and #BlackLivesMatter[11]).

[6] W3C, “Facts About W3C: History,” accessed December 16, 2020, https://www.w3.org/Consortium/facts#history.
[7] This feeling was perhaps best summarized by Barlow's manifesto "A Declaration of the Independence of Cyberspace" (1996), where he claimed: “On behalf of the future, I ask you of the past to leave us alone(...)You are not welcome among us. You have no sovereignty where we gather.” Available in full at https://www.eff.org/cyberspace-independence (last accessed 8/4/2017). It must be noted that the possibility of speaking should not be equated to that of being heard. What the centralization process does is reduce the probability of everyone being equally listened to.
[8] Juan Ortiz Freuler and Rosemary Leith, “Three Reflections Regarding the (Re)Decentralization of the Web,” Berkman Klein Center Medium, July 3, 2019, https://medium.com/berkman-klein-center/three-reflections-on-decentralization-112bd8751e41.
[9] Free Press, “People of Color Need the Open Internet: Racial-Justice Coalition Urges the FCC to Preserve Net Neutrality Under Title II,” Free Press, July 20, 2017, https://www.freepress.net/news/press-releases/people-color-need-open-internet-racial-justice-coalition-urges-fcc-preserve-net.
[10] “Reframing Sexual Violence: From #MeToo to Time’s Up (SSIR),” accessed December 19, 2020, https://ssir.org/articles/entry/reframing_sexual_violence_from_metoo_to_times_up.
[11] “More Than Just A Hashtag: The Influence of Social Media on the Societal Change of the Black Lives Matter Movement | Journal of High Technology Law,” accessed December 19, 2020, https://sites.suffolk.edu/jhtl/2020/09/25/more-than-just-a-hashtag-the-influence-of-social-media-on-the-societal-change-of-the-black-lives-matter-movement/.

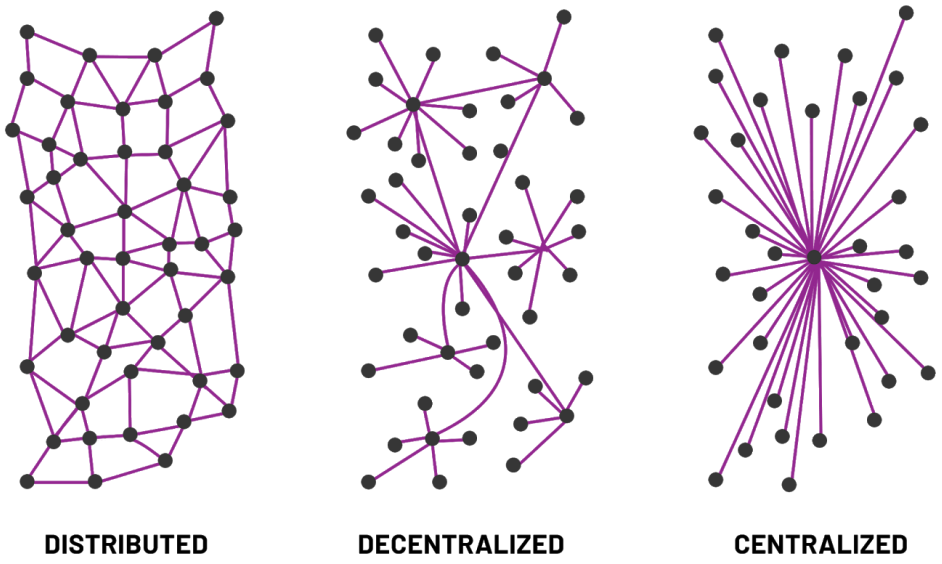

Figure 3 — Network architecture (adapted from Baran, 1962)

When people discuss their past and present, define and refine their identity and condense their individual hopes and dreams, solidarity emerges, and thus a collective future worth fighting for is born.

Things don't stop there! The web didn't just help these dreams of a better future become tangible, it also boosted the likelihood of actually making them happen. How? It reduced the costs of finding physically dispersed, like-minded allies and provided an accessible platform through which to coordinate collective action.[12] And thus, over the past decade, hundreds of grassroots movements have sprung up . . .

It was internet spring.

Everything and anything seemed possible.

[12] Helen Margetts et al., *Political Turbulence: How Social Media Shape Collective Action* (Princeton University Press, 2015).

Today, hope in the internet seems to have faded . . . But why?

Pointing to a single cause is *clickbait.* It leads us astray. Things are a bit more complicated . . .Below is a sketch of the dimensions that intersect in what is often lazily presented as *The Internet's Problem.*

Isolating the effect of each problem is a difficult, if not impossible, task. Yet conceptualizing them as separate dimensions can help us understand the need to design targeted strategies for each problem.

Social problems acquire visibility because of the web. The web often mirrors social problems such as exclusion and inequality. As internet penetration grows and more members of systematically excluded groups get online, certain tensions and contradictions that are silenced or ignored in physical space become more visible. Gentrification might offer blissful ignorance to those living outside the ghetto walls, but the internet is collapsing that physical barrier and opening windows into the lives of those who are oppressed, ignored and silenced. Therefore, there is a set of social problems that are not *created* by the web but *made more visible* by it. Inequality, in all its forms, requires political action aimed at ensuring a fair distribution of the benefits of being a member of society. Yet this challenge goes far beyond what those of us working in tech policy can reasonably be expected to achieve. It requires a thorough debate regarding taxation and public spending, among other issues.

Social problems become quantifiable because of the web. The internet has enabled the creation of large and easily accessible structured data about our societies. These data, in turn, enabled an explosion of quantitative research that can shed light on problems and show statistical associations that are compelling yet often poorly explained. Beyond not rigorous research rests a broader epistemological challenge: the lack of comparable data from the pre-internet. Thus, some of these studies lack a baseline that can show the extent to which problems such as misinformation and [online] violence are *caused* or *made worse* by the internet, and not merely problems reflected by it. It often seems we are eager to kill the messenger for mentioning the problems we face. This in turn causes digital platforms to limit the amount of information they make available to independent researchers. Thus, those with access to key data and those of us shaping public opinion need to make an effort to frame our findings appropriately. In a world where data informs policymaking, governments need to make sure their citizens become more proficient in data analysis. It's not just about ensuring that future generations are prepared for the *jobs* of the

future; it's about ensuring they will be empowered to engage effectively in the democratic *debates* of the future.

Social problems caused by internet platforms. These include design fails that might generate harm to users at large[13]; design fails that specifically affect certain minority or otherwise excluded groups[14]; and the embedding of bad incentive structures that trigger negative consequences often as a result of unforeseen or emergent properties of the ecosystem it enabled (e.g., click-based revenue models fueling click-bait and misinformation).[15] Most public attention has been focused on this area. It is important to stress that online platforms often underplay or obfuscate the impact of their products, their responsibility, their technical capacity to deal with the harm they generate, and their financial capacity to compensate those who have been harmed. This challenge requires setting up a governance structure that is independent and responsive to the community it serves. One that can ensure those who are reckless are held accountable, and that members of the online community are not treated as mere assets from which value can be extracted, but human beings whose rights deserve respect. That said, this report will not try to address the process of institution building. I will instead focus on an underlying phenomenon that explains why defective designs have become so problematic: centralization.

Internet platform issues are magnified due to centralization. The internet was designed as a decentralized system. There were no central brokers deciding who could say what, or what information could, or should, travel through. It was *OK* for things to go wrong. Releasing a product or service quickly, identifying problems based on the experience of a small group of early adopters, and iterating, became a mantra among programmers and entrepreneurs. In decentralized and distributed systems, problems are local and can be neutralized quickly. Therefore – overall – we were willing to accept the risk-taking ethos of internet entrepreneurs. Decentralization thus

[13] Richard Nieva, "Facebook Breach Put Data of 50 Million Users at Risk," CNET, accessed January 15, 2021, https://www.cnet.com/news/facebook-breach-affected-50-million-people/.
[14] Alistair Barr, "Google Mistakenly Tags Black People as 'Gorillas,' Showing Limits of Algorithms," *Wall Street Journal*, July 1, 2015, sec. Digits, https://blogs.wsj.com/digits/2015/07/01/google-mistakenly-tags-black-people-as-gorillas-showing-limits-of-algorithms/.
[15] See, for example Alexander Smith and Vladimir Banic, "How Macedonian Teens Earn — and Spend — Thousands from Fake News," NBC News, December 9, 2016, https://www.nbcnews.com/news/world/fake-news-how-partying-macedonian-teen-earns-thousands-publishing-lies-n692451; "Three Challenges for the Web, According to Its Inventor," World Wide Web Foundation, March 12, 2017, https://webfoundation.org/2017/03/web-turns-28-letter/.

enabled experimentation and innovation by reducing the eventual harm society would suffer when such risks materialized.

The problems created by centralization are not fixed, but subject to change over time. Thus, it is important to underline that on the one hand, over the past five years the degree of centralization has increased dramatically.This process is illustrated by the fact that Google and Facebook alone have crept from managing less than 50% of the traffic to top web publishers, to over 75% today.[1617] On the other hand, the breadth of harm these central gatekeepers can trigger has become much greater. While 10% of the US population, and only a minuscule percentage of the world population, had access to the web in 1995, over 50% of the world population is now online, reaching well over 90% in the richest countries.[18] Furthermore, the amount of time people spend online is increasing by the year.[19]

Thus, as the process of centralization advances over our most important medium of communication, we are increasingly seeing that design fails and the gaming of a platform's rules can have widespread and catastrophic consequences. As Natali Helberger puts it, "The sheer possibility of the abuse of this immense power for one's own political goals is in itself a threat to any functioning democracy. Dispersing concentrations of opinion power and creating countervailing powers is essential to preventing certain social media platforms from becoming quasi-governments of online speech, while also ensuring that they each remain one of many platforms that allow us to engage in public debate".[20]

Throughout the next two steps in this report, I will narrow in on how the centralization process takes place, the risks it poses, and how we can work towards re-decentralizing the web.

[16] "André Staltz - The Web Began Dying in 2014, Here's How," accessed December 15, 2020, https://staltz.com/the-web-began-dying-in-2014-heres-how.html. See also,
[17] Ian Brown, "Interoperability as a Tool for Competition Regulation" (LawArXiv, July 30, 2020), https://doi.org/10.31228/osf.io/fbvxd. pg 15
[18] Max Roser, Hannah Ritchie, and Esteban Ortiz-Ospina, "Internet," *Our World in Data*, July 14, 2015, https://ourworldindata.org/internet.
[19] "Daily Time Spent Online by Device 2021," Statista, accessed January 15, 2021, https://www.statista.com/statistics/319732/daily-time-spent-online-device/.
[20] Natali Helberger, "The Political Power of Platforms: How Current Attempts to Regulate Misinformation Amplify Opinion Power," *Digital Journalism* 8, no. 6 (July 2, 2020): 842–54, https://doi.org/10.1080/21670811.2020.1773888; Ian Brown, "Interoperability as a Tool for Competition Regulation" (LawArXiv, July 30, 2020), https://doi.org/10.31228/osf.io/fbvxd.

Step 2 — Understanding the present and future risks triggered by a centralized information system

The previous section provided a review of the growing concerns regarding the internet and how it is rooted in many causes: underlying social problems, bad science, bad incentive structures put in place by big platforms, and the ongoing process of centralization that magnifies the impact of each problem that arises.

I first defined centralization broadly as the process through which intermediaries reshape our internet, increasing their gate-keeping power over the information that circulates through it. I then argued that centralization is creating the single point of failure that the original design sought to avoid, and that this should be the key concern of policymakers, given the breadth of harms it enables, and the speed at which such harms can take place. Lastly, I explained that the culture of *fail fast and iterate*[21] that boosted innovation over the past decades has become highly problematic. In a centralized system, problems are no longer localized and easy to neutralize. In a centralized system, failure spreads too quickly, and can cause much harm. But how does centralization take place?

Constant evolution

The web is *always and only becoming*. It is in constant evolution. Each link that is made, each server that is set up, is part of this process. And yet, some actors have bigger wrenches than others. There are gatekeepers at a network, device, application and storage level.[22] These gatekeepers have the capacity to influence the decisions of thousands of content and tech providers and billions of people who produce and consume content.[23] Or, as the European Data Protection Supervisor put it, "they serve as gatekeepers to the internet, able to control the digital public space, and determine through secret, proprietary means what people can and cannot see – whether it is recommended content or products, commercial ads, political messages or news items."[24] These gatekeepers can influence how the entangled web evolves, and thus how people understand the world they live in.

It is important to underline that these digital gatekeepers are not merely *replacing* the traditional media in their role as information brokers. Their power is qualitatively superior.

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[21] See, for example, William B. Gartner and Amy E. Ingram, "What Do Entrepreneurs Talk about When They Talk about Failure?," *Frontiers of Entrepreneurship Research* 33, no. 6 (2013): 2; Ryan Babineaux and John D. Krumboltz, *Fail Fast, Fail Often: How Losing Can Help You Win* (TarcherPerigee, 2013).

[22] Tai Liu et al., "The Barriers to Overthrowing Internet Feudalism," in *Proceedings of the 16th ACM Workshop on Hot Topics in Networks*, HotNets-XVI (New York, NY, USA: Association for Computing Machinery, 2017), 72–79, https://doi.org/10.1145/3152434.3152454.

[23] Renata Ávila, Juan Ortiz Freuler, and Craig Fagan, "The Invisible Curation of Content: Facebook's News Feed and Our Information Diets," *Retrieved June* 28 (2018): 2019.

[24] Wojciech Wiewiórowski, "Sharing Is Caring? That Depends…," Text, European Data Protection Supervisor - European Data Protection Supervisor, December 13, 2019, https://edps.europa.eu/press-publications/press-news/blog/sharing-caring-depends_en; Ian Brown, "Interoperability as a Tool for Competition Regulation" (LawArXiv, July 30, 2020), https://doi.org/10.31228/osf.io/fbvxd.

Whereas traditional media managed a one-way stream of information

old media —> consumer

new information brokers also harvest a LOT of real-time data about the information recipients, creating a two-way stream of information:

digital media <—> user

This shift allows digital media to leverage the collected data and adapt interfaces in order to nudge users to perform specific actions.[25]

When it comes to the new set of challenges created by digital and social media actors, it is important to underline, as Mike Annany does, that "The shortcomings of social media platforms could not be seen as failures to live up to the traditions of journalism – they do not want to be news organizations anyway – but as shortcomings in the "system of freedom of expression" that highlight how the power to create conditions under which people can hear is unevenly distributed."[26]

"Intermediation continues to grow in breadth and depth, fueling the process of web centralization"

Intermediation can lead to abuses but is not in itself a bad thing. Search engines, for example, have become a key enabler of the web's continuous growth and scale by helping users find relevant information in the ever-growing web of content. It is thus important for policymakers to take a detailed look into this phenomenon. Intermediation can take place in several ways:

[25] Sanju Menon, Weiyu Zhang, and Simon T. Perrault, "Nudge for Deliberativeness: How Interface Features Influence Online Discourse," in *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, CHI '20 (New York, NY, USA: Association for Computing Machinery, 2020), 1–13, https://doi.org/10.1145/3313831.3376646; Christoph Schneider, Markus Weinmann, and Jan vom Brocke, "Digital Nudging: Guiding Online User Choices through Interface Design," *Communications of the ACM* 61, no. 7 (June 25, 2018): 67–73, https://doi.org/10.1145/3213765; Nick Couldry and Ulises A. Mejias, "Data Colonialism: Rethinking Big Data's Relation to the Contemporary Subject," *Television & New Media* 20, no. 4 (May 1, 2019): 336–49, https://doi.org/10.1177/1527476418796632.

[26] Mike Ananny, *Networked Press Freedom: Creating Infrastructures for a Public Right to Hear*, MIT Press Scholarship Online (Cambridge, MA: The MIT Press, 2018). p. 189

Intermediation can be structurally embedded, such as when search algorithms automatically sort information on behalf of the user[27] or on a social media newsfeed.[28]

Intermediation can also operate *within* the previously mentioned structure in organic ways, such as when users unknowingly interact with networks of *bots* (automated accounts) controlled by a single user or group of users,[29] or armies of *trolls* hired or otherwise called upon to disseminate specific information or disrupt dialogue.[30] In these cases, the bots and trolls act as intermediaries for whoever creates, owns or pays them.[31]

But how did we get to this point where centralization is giving the internet a bad name?

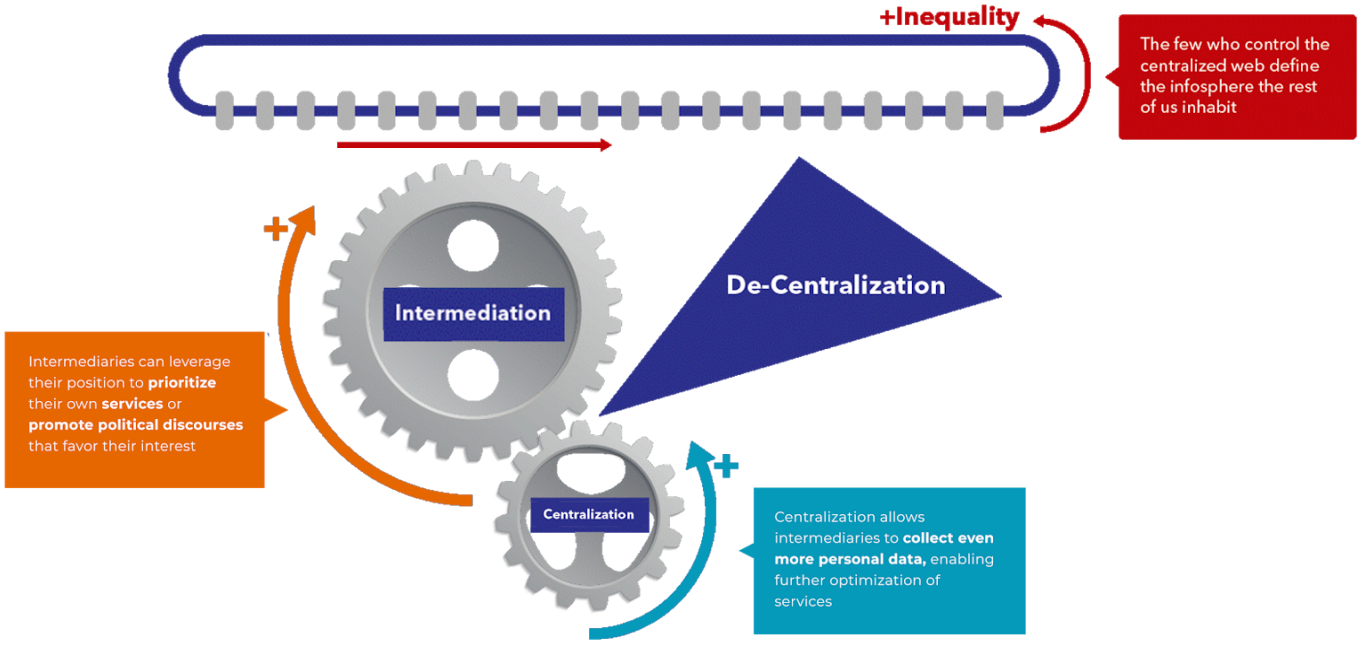

Figure 4 — The Mechanics of centralization (CC-BY)

[27] See, for example: EU, "European Union vs Google (Search - Shopping)," June 27, 2017, https://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=1_39740.https://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=1_39740
"Google Hit by Landmark Competition Lawsuit in US over Search," *BBC News*, October 20, 2020, sec. Business, https://www.bbc.com/news/business-54619148;
"Apple has been accused of acting like a monopoly — and new investigation into its App Store only gives its critics more ammo to make their case," Business Insider Nederland, September 9, 2019, https://www.businessinsider.nl/apple-investigation-finds-app-store-ranked-apple-apps-over-competitors-2019-9/, among others

[28] Renata Ávila, Juan Ortiz Freuler, and Craig Fagan, "The Invisible Curation of Content: Facebook's News Feed and Our Information Diets," (2018): *Retrieved June* 28, 2019

[29] See for example Chris Baraniuk, "How Twitter Bots Help Fuel Political Feuds," Scientific American, accessed December 19, 2020, https://www.scientificamerican.com/article/how-twitter-bots-help-fuel-political-feuds/; "Bots Are Influencing the Debate over Net Neutrality, Says New York's Attorney General," Newsweek, November 22, 2017, https://www.newsweek.com/bots-influencing-debate-over-net-neutrality-says-new-york-attorney-general-719454.

[30] See, for example, Raymond Zhong Kao Paul Mozur,Aaron Krolik,Jeff, "Leaked Documents Show How China's Army of Paid Internet Trolls Helped Censor the Coronavirus," ProPublica, accessed December 19, 2020, https://www.propublica.org/article/leaked-documents-show-how-chinas-army-of-paid-internet-trolls-helped-censor-the-coronavirus; "Undercover Reporter Reveals Life in a Polish Troll Farm," the Guardian, November 1, 2019, http://www.theguardian.com/world/2019/nov/01/undercover-reporter-reveals-life-in-a-polish-troll-farm.

[31] Samantha Bradshaw and Philip N Howard, "Troops, Trolls and Troublemakers: A Global Inventory of Organized Social Media Manipulation," Working Paper (Oxford Internet Institute, 2017.).

Part of it is an “organic” circle, whereby the more central a player is, the more personal data and data regarding how the service is used it can collect, enabling such players to further segment users for targeting and also iterate and optimize intermediation services. This optimization and personalization can in turn make services more attractive to a wider range of users, pushing competitors out of the market, and thus reducing the range of competing alternative services to which users can migrate. In the case of dominant players, this circle is typically coupled and reinforced by network effects (when more usage of the service by any person increases the service’s value for other users) and walled gardens (a closed ecosystem in which all the operations are controlled by the ecosystem operator[32]), creating a clear example of a problematic rich-get-richer dynamic[33] that might nonetheless fall within the boundaries of what is legal.

The other key dynamic occurs beyond the set of existing rules, and I would call illegitimate *on its face*. That is, intermediaries often leverage their position as a tool to prioritize sister services,[34] allowing them to further increase their market dominance both horizontally and vertically.[35] The illegitimacy of this strategy stems from the belief that their success in the intermediation market should not suffice to legitimize their forcing their way towards success in adjacent markets.

Amazon offers a perfect example of this dynamic: it relies on its position as owner of the marketplace to study buyer behavior and define the products it could sell directly to the people engaging within its marketplace. Amazon relies on its control over the platform’s design and the sorting algorithms that organize the products within it to get a competitive edge over rivals within its own marketplace.[36]

One could argue Google is leveraging what could be considered a similar strategy through the information boxes and snippets extracted by its search engine that are included within the search results page. Less than half of Google searches now result in a click.[37] That is,

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[32] Pierre de Poulpiquet, “What Is a Walled Garden? And Why It Is the Strategy of Google, Facebook and Amazon Ads Platform?,” *Medium* (blog), November 3, 2017, https://medium.com/mediarithmics-what-is/what-is-a-walled-garden-and-why-it-is-the-strategy-of-google-facebook-and-amazon-ads-platform-296ddeb784b1.

[33] See, for example, Andrew Clark, “Why Big-Tech Mergers Stifle Innovation,” *Chicago Booth Review*, March 2020, https://review.chicagobooth.edu/economics/2020/article/why-big-tech-mergers-stifle-innovation.

[34] For example, see Wagner, K. (2017, August 2). Facebook’s latest News Feed change could push more publishers to Instant Articles. Recode. Retrieved from https://www.recode.net/platform/amp/2017/8/2/16079814/facebook-news-feed-update-mobile-app-load-time-instant-articles (last accessed 8/8/2017) and Scott, M. (2017, June 27). Google Fined Record $2.7 Billion in E.U. Antitrust Ruling. New York Times. Retrieved from https://www.nytimes.com/2017/06/27/technology/eu-google-fine.html (last accessed 8/8/2017) amongst others. Also see trickier questions around how policy decisions where companies have a regulatory conflict of interest. Eg. Ortiz Freuler, J. (2017, July 28).Twitter's battle over the Net Neutrality hashtag. Tableau. Available at https://public.tableau.com/profile/juan.ortiz#!/vizhome/Twittersbattleoverahashtag/Activityin2017dashboard (last accessed 8/8/2020) . On the antitrust components, see: Khan, L. (2017) Amazon’s Antitrust Paradox. The Yale Law Journal (pg 86). Available at http://www.yalelawjournal.org/pdf/e.710.Khan.805_zuvfyyeh.pdf (last accessed 8/10/2017)

[35] Daniel Allott, “Big Tech and the Antitrust Debate: Do Network Effects Outweigh Competition Concerns?,” Text, TheHill, July 31, 2020, https://thehill.com/opinion/technology/509933-big-tech-and-the-antitrust-debate-do-network-effects-outweigh-competition.

[36] Julie Creswell, “How Amazon Steers Shoppers to Its Own Products (Published 2018),” *The New York Times*, June 23, 2018, sec. Business, https://www.nytimes.com/2018/06/23/business/amazon-the-brand-buster.html . For another specific example, see User @Nixxin on Twitter. https://twitter.com/nixxin/status/895319807213490176/photo/1

[37] Rand Fishkin, “Less than Half of Google Searches Now Result in a Click,” *SparkToro* (blog), August 13, 2019, https://sparktoro.com/blog/less-than-half-of-google-searches-now-result-in-a-click/.

Google increasingly provides users access to content created by third parties within the page containing search results in a way that keeps eyeballs on its own property. The longer people remain on Google property, the longer it exposes people to its own ads. Conversely, if people don't click on links, the ads on the website that originally posted the content get no eyeballs and the content producers get no payment. And though the user might find this time-saving arrangement useful, if the content producers had a reasonable expectation to obtain compensation for their work through ads, then this disruption risks undermining the sustainability of the ecosystem.

The perils of centralization: a peek into the future

New technological developments – such as smart assistants and augmented and virtual reality – will likely increase the breadth and depth of intermediation over the next decade. This, in turn, threatens to accelerate and further entrench the process of centralization.

To explore these challenges in more detail, the next two subsections will be focused on two key areas: search and person-to-person communications.

Centralization and search

Originally, different users would go to different static websites looking for links to other websites, but this quickly shifted to search engines presenting users with a list of websites of interest. The current trend suggests that smart assistants will take over this role, skipping that step and providing the user with specific contents or services, without offering the bigger picture.[38] Winner takes all.

[38] "Why Tech Giants Are So Desperate to Provide Your Voice Assistant," *Harvard Business Review*, May 7, 2019, https://hbr.org/2019/05/why-tech-giants-are-so-desperate-to-provide-your-voice-assistant. Aoife White, "Siri, Alexa Targeted as EU Probes 'Internet of Things,'" *Bloomberg.com*, July 16, 2020, https://www.bloomberg.com/news/articles/2020-07-16/internet-of-things-data-are-a-focus-for-eu-vestager-warns .

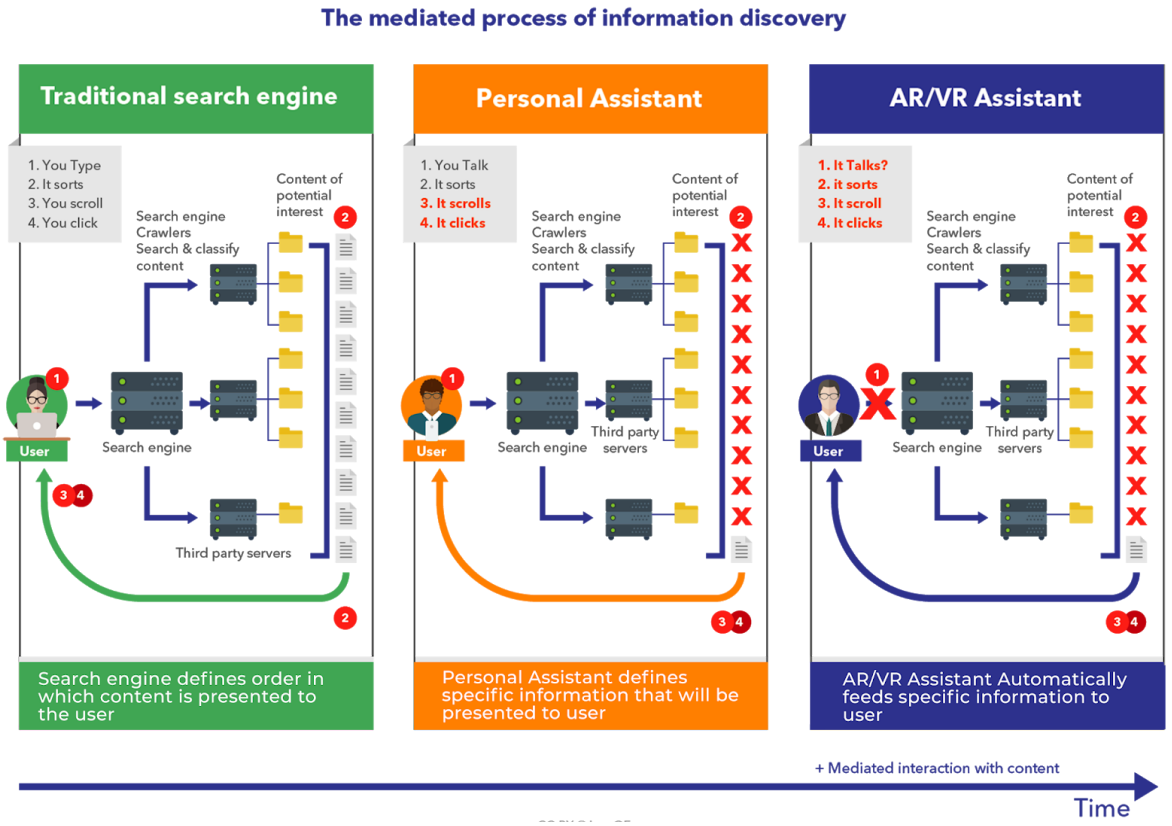

Figure 5 — The evolution of information retrieval (CC-BY Juan Ortiz Freuler)

With AR and VR the user is placed in an even more passive role and might be fed information in more seamless ways than through today's online advertising.[39] Whoever operates the code manages the process of blending the curated digital world with the physical environment in which our species evolved over millions of years. No contours on the screen. No cover on the book to remind people of the distinction between worlds.

Smart assistant service providers, such as Siri, Google Assistant, and Alexa, are in constant negotiation with companies that produce smart devices (cars, refrigerators, thermostats, etc.).[40] As a result of these negotiations, smart assistants allow users to easily control their whole swarm of smart objects. And, perhaps more importantly for the issue at hand, these agreements allow the companies running the smart assistants to increase the quantity and quality of data they collect about users.[41]

[39] See for example Buhr, S. (2017, August 4) Omega Ophthalmics is an eye implant platform with the power of continuous AR. TechCrunch . Available at https://techcrunch.com/2017/08/04/ophthalmics-is-an-eye-implant-with-the-power-of-continuous-ar/

[40] "The total number of smart home devices supported by voice assistants increased to almost 90,400 as of May 2019. Amazon Alexa is the platform that is supported by the highest number of devices, with recent estimates reaching as high as 60,000 supported devices." See "Number of Smart Home Devices Supported by Voice Assistant 2019," Statista, accessed December 19, 2020, https://www.statista.com/statistics/933551/worldwide-voice-assistant-supported-smart-home-devices/.

[41] The recording and transmitting data from new objects creates unexpected and unregulated risks. As inference techniques become more powerful, they more easily overcome current anonymization techniques, creating unexpected risks. For example, cars can now be remotely hacked, and the remote hacking of Chryslers triggered a recall of 1.4M vehicles (2015). Cloudpet's connected bear leaked kid's recordings and information of thousands of customers (March 2017). And 30,000 smart fridges were infected by the pied piper virus (June, 2017). The owners of the robot vacuum cleaner *roomba* have decided they will sell data that could potentially map the interior of clients' apartments. See Jones, R. (2017, July 24) Roombas next big step is selling maps of your home. Gizmodo. Available at http://gizmodo.com/roombas-next-big-step-is-selling-maps-of-your-home-to-t-1797187829 (Last accessed

Developments in technologies such as AR and VR have the potential to further isolate people into curated silo-worlds, where information flows are managed by the owners of these algorithms.[42] The broad adoption of these technologies could lead to a reduction in the probability of users facing random or unanticipated encounters with information, such as a protest in their neighborhood. These *unmediated* encounters are often key to the development of empathy between people, and the fuel upon which social movements typically develop.[43]

"Further isolating groups would erode the set of common experiences upon which trust within society is built. This trust is key for the coordination of big projects and to ensure a fair distribution of the benefits of such coordination."

Centralization and person-to-person communication

The internet has not merely reduced the cost of one-to-one person communication – it has offered a qualitative leap in communications. Whereas the newspaper, radio and TV enabled one-to-many communications, and telephone facilitated one-to-one communications, the internet has facilitated group communications, often referred to as *many-to-many* communications.[44]

This is what we observe in places like Twitter and chat rooms, where thousands if not millions of people interact in real time. The deployment of effective many-to-many communications often relies on curatorial algorithms to help people find relevant conversations or groups of people. This means that some of the challenges outlined in the previous subsection on *Search* apply to person-to-person communications.

Yet centralization also poses a distinct set of risks for these communications. Among them, risks to the integrity of *signifiers* (representations of meaning, such as symbols or gestures), and how they are decoded into what is *signified* (meant) by them.

9/4/2020) and "The IoT is where the Internet meets the physical world", CISCO (n.d.) Secure IOT Framework. CISCO. Available at https://www.cisco.com/c/en/us/about/security-center/secure-iot-proposed-framework.html (last accessed 8/8/2020)

[42] B. Kenwright, "Virtual Reality: Ethical Challenges and Dangers [Opinion]," *IEEE Technology and Society Magazine* 37, no. 4 (December 2018): 20–25, https://doi.org/10.1109/MTS.2018.2876104.

[43] C. Daniel Batson, "Addressing the Altruism Question Experimentally," in *Altruism & Altruistic Love: Science, Philosophy, & Religion in Dialogue* (New York, NY, US: Oxford University Press, 2002), 89–105, https://doi.org/10.1093/acprof:oso/9780195143584.003.0010.

[44] Klaus Bruhn Jensen and Rasmus Helles, "The Internet as a Cultural Forum: Implications for Research," *New Media & Society* 13, no. 4 (June 1, 2011): 517–33, https://doi.org/10.1177/1461444810373531.

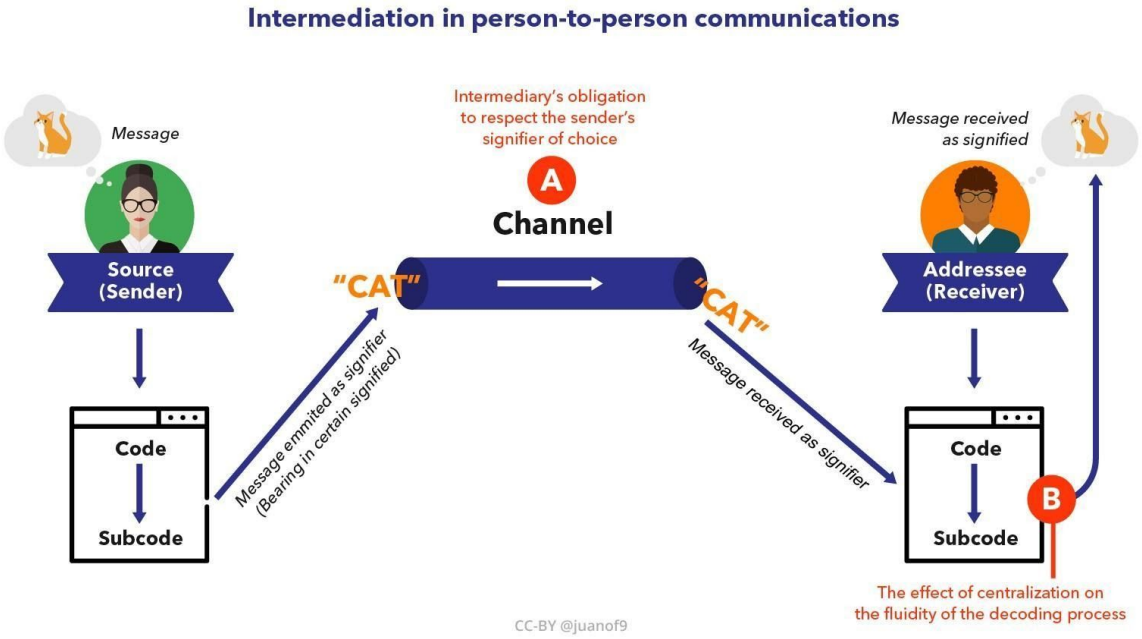

Figure 6 — A model of communications inspired by Castells (2009)[45] (CC- BY @Juanof9)

A. The intermediary's responsibility to respect the integrity of a message

When texting with a new lover it is often the case that a word or emoji is misinterpreted. This often leads to an unnecessary quarrel, and the couple may even feel the need to meet up physically in order to clear things up.

> – *Oh, no! That's not what I meant . . . What I was trying to say is . . .*

Conveying meaning is not a simple task, and we often require a new set of symbols (or even medium) to explain exactly what we wanted to say.

Now imagine that someone could tamper with messages, and that there is no physical space available to amend things . . . And that it's the electorate or a group of protesters one is trying to communicate with . . .

The internet is often hailed for bringing people *closer together*. The apparent collapse of the physical space between users is achieved by slashing down the time between the moment in which a message is sent and received, until it's close to real time. For millions of years, the only real-time communication we've had as a species involved physical presence. Thus, real-time digital communication makes us feel *physically* close. This illusion can obscure the physical infrastructure between us, and, central to this report, that *someone* manages it. And yet, the messages between are *transported*. And each set of packages traverses the realms of several actors *before* it reaches its destination.[46] Thus, it is important that all parties

[45] Castells, M. (2013). *Communication power*. OUP Oxford.
[46] For a brief description of the architecture, see "Tier 1 Network," in *Wikipedia*, December 9, 2020, https://en.wikipedia.org/w/index.php?title=Tier_1_network&oldid=993205352. To explore this topography for yourself, you can use *traceroute* services such as "Traceroute-Online.Com," Traceroute Online with Mapping | Tactical Network Testing, https://traceroute-online.com/.

involved in this process respect the integrity of the message. This is a right that can be traced back to the secrecy of correspondence. But, in contrast with our old postal system, with visible offices typically located in the prime real estate of each town, the role of our current intermediaries goes mostly unnoticed by the general public.

> ***"It is fundamental to our right to freedom of expression that any and all parties who exercise control over any layer of our channels of communication respect the integrity of the message that is being delivered."***

A centralized system, where a handful of actors can exercise gatekeeping control at one or several layers of the internet stack, increases the odds that exchanging certain *signifiers* (i.e., symbols, such as words) can be arbitrarily limited.

If virtual and augmented reality are the future of communications, then we should bear in mind that not only spoken or written language will be sent over communication channels. These communications will include a wide array of signals for which we still have poorly defined signifiers. This includes body gestures and – potentially – other senses, such as smell and taste.

To get an idea of the complexity of the task ahead of us, and the discretion intermediaries might be afforded in these translations, think about the gap between experiencing a movie through *descriptive noise captioning* and the standard hearing experience of the same content.

Figure 7 — Screenshot: George Costanza, Seinfeld.

In the past, the debate was focused on the framing that traditional intermediaries, such as newspapers, applied to political events. For example, how traditional media shift the narrative depending on the identity of the victims and perpetrators of atrocities (instead of the acts themselves), in order to shape its audience's appetite for certain policies[47] Today, with new intermediaries come new challenges. Our new mediums enable person to person mass communication. By reducing (or eliminating) the availability of alternative mediums through which parties can communicate, centralization could reduce or limit the sender's ability to double-check with the receiver(s) whether or not a message's signifiers were delivered correctly.

Distributed archive systems, where many actors simultaneously store the same content independently and check for consistency across all copies (such as those currently being developed based on Bitcoin's blockchain model) offer a glimpse of hope in this battle.[48] A blockchain system could protect the message's integrity from ex-post tampering. Yet it must be noted that the stage between the message's production and its transcription onto a distributed ledger is subject to some of the same challenges present in our current model.

B. The effect of centralization on the fluidity of the decoding process

A second issue affecting person-to-person communication is associated with the *decoding* process through which the relationship between signifier (symbol) and signified (meaning) comes to be (represented as point B on Fig. 6, above).

The process of information acquisition is neither fully automatic nor passive. The receiver has a role to play. The receiver's past experiences, and the context within which they receive the information, play a role.

The word *cat* triggers a different set of reactions in a cat lover and a person allergic to cats. That is, the receiver constructs meaning by relying on her own experiences as well as recalling instances in which she observed members of the community managing to coordinate a conversation by relying on what seemed like an agreed-upon meaning for a concept. Through this process, individuals and groups play an active part in the construction of meaning and the process of establishing a shared reality around which to coordinate their actions.[49]

The fact that the process of building meaning requires active interpretation is what enables language to be fluid: the relationship between a signifier (symbol, such as a word) and what is signified (meaning) can shift over time. Our natural language, as a system, is open and somewhat decentralized. It requires individuals to coordinate around a system that defines the associations between symbols and meanings. No single actor can effectively impose a meaning. This phenomenon is perhaps most visible in slang, where marginalized groups, despite being excluded from formal spaces of power, are able to coin terms that the

[47] Edward S. Herman and Noam Chomsky, *Manufacturing Consent: The Political Economy of the Mass Media* (Random House, 2010).
[48] For a comprehensive list of initiatives, see Tai Liu et al., "The Barriers to Overthrowing Internet Feudalism," in *Proceedings of the 16th ACM Workshop on Hot Topics in Networks*, HotNets-XVI (New York, NY, USA: Association for Computing Machinery, 2017), 72–79, https://doi.org/10.1145/3152434.3152454.
[49] Clay Beckner et al., "Language Is a Complex Adaptive System: Position Paper," *Language Learning* 59 (2009): 1–26, https://doi.org/10.1111/j.1467-9922.2009.00533.x.

community feels more accurately describe their thoughts and feelings, allowing it to spread, often beyond such communities and into the mainstream.

This active decoding process suggests that a reflective capacity comes embedded within language. The *noisiness* of the process through which we interpret and discuss our world provides the flexibility necessary for critical social changes to become possible. New meaning can be constructed.

With *cat,* the process is quite straightforward. Now shift from cat to more abstract concepts – like *justice* and *war,* or *muslim* and *latino* – and things get trickier. Since people don't necessarily deal with muslims or latinos directly, third parties such as the mass media and the board of education exercise greater control over their meaning.[50]

Thus, much like the elites who took over the task of defining terms in a dictionary, our mass media plays a big role in the process of rooting the signifiers onto a broader set of signifiers that in turn define how we collectively construct meaning.

Reiterated associations between Latinx and negative frames can, over time, lead to the triggering of negative mental responses to the mere reference to *Latinx*, even when the negativity is not warranted by the context. When this process takes place, the term has been effectively rooted onto the negative frame. From that moment, the negativity has become part of its meaning.[51]

"A centralized web of content, where the few define which frames should be applied and distributed, becomes a liability – the opposite of the open space the web was meant to create."

Many of us still believe that by distributing the power to construct meaning – and therefore the way we understand our identity, our relationships, and the societies we live in – the web has huge potential to make the world a fairer and more equal place.

Let's consider how the process of centralization might play out 20 years from now . . .

Many resources are currently devoted to the development of brain-computer interfaces.[52] Brain-computer interfaces imply tending a bridge across the air gap that currently exists between people and their devices. That is, bridging our five senses.

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[50] Manuel Castells, *Communication Power* (Oxford ; Oxford University Press, 2009). Ch.3
[51] Ibid. pg 205
[52]General overview:"Brain Computer Interface Market Size Report, 2020-2027" (Grand View Research, February 2020), https://www.grandviewresearch.com/industry-analysis/brain-computer-interfaces-market.
MIlitary use: "Six Paths to the Nonsurgical Future of Brain-Machine Interfaces," accessed December 20, 2020, https://www.darpa.mil/news-events/2019-05-20.
Big tech: Sigal Samuel, "Facebook Is Building Tech to Read Your Mind. The Ethical Implications Are Staggering.," Vox, August 5, 2019, https://www.vox.com/future-perfect/2019/8/5/20750259/facebook-ai-mind-reading-brain-computer-interface.

Eliminating such an air gap might limit the receiver's capacity to diverge in the way they process the signifier: in the near future, the computer could arguably take over the decoding role, and with it our subject's ability to decode and reconstruct – through purpose or mistake – signifiers into novel and potentially transformative meanings. The evolution of thought itself could become subject to the whims of whomever controls the tech. Whereas our natural language is an open and somewhat decentralized system, code is more rigid, like numbers. Huge power thus lies in the hands of those who construct the libraries upon which these systems operate.

Too much power . . .

Those in control of information flows are gaining too much power. As the concentration of power increases, the "mistakes" of these power players trigger harms of a breadth previously unknown. Public scrutiny is on the rise. Yet the public seems to react with cynicism, distrust and criticism to whatever *fix* big corporations propose. This suggests public criticism is not necessarily focused on the solution being put forward, but on the actors forwarding them. There seems to be a feeling that these corporations lack the legitimacy to exercise the power they have managed to amass, regardless of *how* they choose to exercise it.[53]

So what does a way forward look like? Step 3 presents the blueprint of a plan aimed at redistributing power . . .

[53] An expanded version of this argument, as it applies to Facebook is available at Juan Ortiz Freuler, "Facebook Will Fail to Solve #FakeNews," Common Dreams, August 28, 2018, https://www.commondreams.org/views/2018/08/28/facebook-will-fail-solve-fakenews.

Step 3 — Deploying the Neutrality Pyramid: redistributing power

In 2018, Cambridge Analytica[54] was on the cover of every newspaper. The company had managed to harvest millions of data points from Facebook users. Most reporters focused on the meaning of consent in the digital age and Facebook's inability to enforce its own rules. Most reporters covering the Cambridge Analytica story missed out on the bigger story: The scale of the operation was only possible because Facebook has too much data about too many people. Cambridge Analytica was a cautionary tale about the risks of centralizing data and control over the flows of information. The internet and the web were designed to decentralize data and power. Cambridge Analytica's use of Facebook was a clear example of what a system with a single point of failure can eventually lead to.

The Cambridge Analytica scandal should have triggered a discussion about the bigger picture: how corporations – which exert gatekeeping power over internet access, device, application, and data markets – have become a liability. But it did not. If we *had* promoted that discussion in 2018, perhaps we wouldn't have seen Australian newspaper articles being banned from Facebook in February 2021.[55] But the debate remains narrowly focused on how to distribute big tech's big money, and less so on the need to decentralize the net.

The problem with misdirected anger is that it can lead to misdirected policies which undermine the internet's capacity to catalyze much-needed social change. If we accept that the internet has become a key tool for public debate and political coordination, then this aspect should be at the center of the regulatory concern.

> ***"In representative democratic systems, public debate and political coordination are expected to determine which interest groups will have access to the political institutions of government, and which interests will be catered to by these institutions. Such institutions of government, in turn, are expected to determine the principles under which societies are to be organized, and the rules of engagement within it. That includes not only defining the limits of the rights to freedom of expression and privacy, but also the way we understand property rights. If we agree that different legal and technical arrangements shaping the internet affect people's ability to meaningfully engage with public debates and political coordination, then this issue should be at the center of our debate. All other considerations are secondary in their importance."***

Once we apply this lens it becomes clearer that recent developments on the internet are indeed problematic. Nevertheless, centralization is often neglected for being less tangible,

[54] For a basic review, visit "Cambridge Analytica," in *Wikipedia*, November 28, 2020, https://en.wikipedia.org/w/index.php?title=Cambridge_Analytica&oldid=991148638.
[55] Rod McGuirk, "In Surprise Move, Facebook Blocks News Access in Australia," *AP NEWS*, February 18, 2021, sec. Technology, https://apnews.com/article/facebook-blocks-australia-news-access-fed95e78e8bf30f167eb1a2d893ac89c.

and it underlies much of what concerns the general public. It's a problem that not only reflects but can reinforce existing social problems and frustrate the goal of ensuring meaningful political participation online.

Centralization and decentralization

By centralization I refer to the process through which intermediaries have reshaped the internet and the web, placing themselves as gatekeepers of information.[56] Yet, the power of intermediaries is far from its peak. The recent and upcoming technological developments around the so-called internet of things, augmented reality, virtual reality and brain-machine interfaces are set to broaden and steepen these powers.

One thing should be certain at this point: whereas the problem is clear, no solution is straightforward. Every turn requires difficult tradeoffs. It is therefore imperative to involve the general public in this debate in order to ensure that all perspectives and interests are given proper consideration, and the outcomes of this process are legitimate. To achieve this, we will need to broaden the base of the camp demanding the decentralization of the net.[57]

"We cannot afford the growing risk that centralization is creating for our societies. Decentralization is about creating technological barricades, so power remains distributed across the network."

If we agree that the general public debate is overly focused on the visible symptoms of the process of centralization, instead of centralization itself, perhaps a first step is to make centralization a more tangible issue.

If we agree that tech companies have obscured the key political battleground of this century, we need to shed some light over the internet's inner workings and provide a vocabulary, a set of metaphors and an actionable framework around which people can rally.

Introducing the Neutrality Pyramid

The basic goal of this framework is simple: restating the physical existence of intermediaries and their power to policymakers and the broader public. The *Neutrality Pyramid* does this by

[56] See Juan Ortiz Freuler and Rosemary Leith, "Three Reflections Regarding the (Re)Decentralization of the Web," Berkman Klein Center Medium, July 3, 2019, https://medium.com/berkman-klein-center/three-reflections-on-decentralization-112bd8751e41 . Tai Liu et al., "The Barriers to Overthrowing Internet Feudalism," in *Proceedings of the 16th ACM Workshop on Hot Topics in Networks*, HotNets-XVI (New York, NY, USA: Association for Computing Machinery, 2017), 72–79, https://doi.org/10.1145/3152434.3152454 ;

[57] Primavera De Filippi, Juan Ortiz Freuler, and Joshua Tan, "The Declarations of Cyberspace," Berkman Klein Center Medium, November 30, 2020, https://medium.com/berkman-klein-center/the-declarations-of-cyberspace-ee0c4499de64 .

materializing some of the key layers in which gatekeeping is being exercised today. It highlights the types of actors that, at each layer, can affect the people's ability to share ideas and produce meaningful political change tomorrow.

Though the Neutrality Pyramid incorporates many aspects associated with interoperability[58] and open standards,[59] it takes its name from the concept of *net neutrality,* which the general public has already engaged with and actively defended in the past.[60] Through the Neutrality Pyramid I riff on the general principle of *no blocking, no throttling and no paid prioritization* in order to explain how variations of this principle could be extended from network providers at the base of the pyramid to the actors managing the upper layers.

But why *net neutrality*?

Net neutrality operates as a limit to the power of intermediaries. According to the US judiciary, this limit has positive economic consequences. It stated that, by keeping the content and connectivity layers separate, it keeps the "virtuous circle of innovation" in motion.

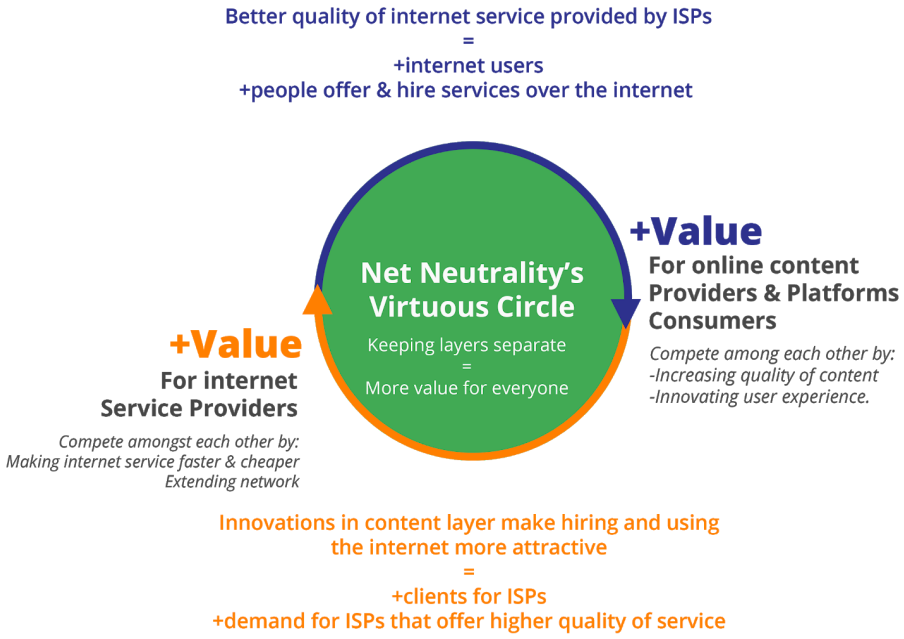


Figure 8 — A sketch of the virtuous circle triggered by net neutrality (CC-BY)

[58] the ability of different types of computers, networks, operating systems, and applications to work together effectively,without prior communication, in order to exchange information in a useful and meaningful manner. Source: "Dublin Core Metadata Initiative: Glossary," April 2004, https://www.dublincore.org/specifications/dublin-core/usageguide/glossary/.
[59] a formal document that establishes uniform technical criteria, and is developed through an open, consensus driven, participatory process, focused on supporting interoperability. Source: "The Modern Standards Paradigm - Five Key Principles," *OpenStand* (blog), accessed February 18, 2021, https://open-stand.org/about-us/principles/.
[60] "Net Neutrality by Country," in *Wikipedia*, October 21, 2020, https://en.wikipedia.org/w/index.php?title=Net_neutrality_by_country&oldid=98466675 1.

This framework was put to test before the courts by Verizon (2014), as it challenged net neutrality. The DC Circuit Court claimed the existence of such a virtuous circle "is reasonable and supported by substantial evidence".[61] Considering the risk of any policy proposal to be caught into a long process of litigation, and even if we would like the neutrality debate focus on the political implications,[62] having the judiciary vouch for the existence and value of this virtuous circle suggests its solid ground on which to continue building.

The Neutrality Pyramid seeks to build upon these pillars by assuming *net* neutrality is a **necessary, but not sufficient, condition** for people to navigate the web freely and protect the virtuous circle. To protect the virtuous circle, we can and should apply the core principles of net neutrality to other layers. We need to guarantee enforceable rules against discrimination and self-dealing[63] at each level if we are going to ensure the web remains open.

The choice of a pyramidal design seeks to signal that, from the perspective of an individual person, actors at the base of the pyramid exercise a broader range of controls over their ability to use the net. If an internet service provider (ISP) decides to drop data packets containing certain keywords, then it doesn't matter what device we have, or what platform we rely on: the message will not be delivered. If a device does not allow the use of certain apps, then certain *tools* may become unavailable, and so on. The lower the actor is placed on the pyramid, the greater the risk they pose to the open internet and the open web as tools for social change. The existence of layers within the pyramid also seeks to underline that tailored and targeted approaches for each actor might be required.[64] As Lina Khan states, "a focus on process assigns government the task of creating background conditions, rather than intervening to manufacture or interfere with outcomes."[65]

[61] Verizon v. FCC (2004) Commented version of the case available through Kami https://web.kamihq.com/web/viewer.html?source=sharedfile&document_identifier=97a208a8-685d-4db6-acc8-a16aca9c64e6

[62] Russell A. Newman, *The Paradoxes of Network Neutralities* (The MIT Press, 2019), https://doi.org/10.7551/mitpress/11040.001.0001. pg. 455-460

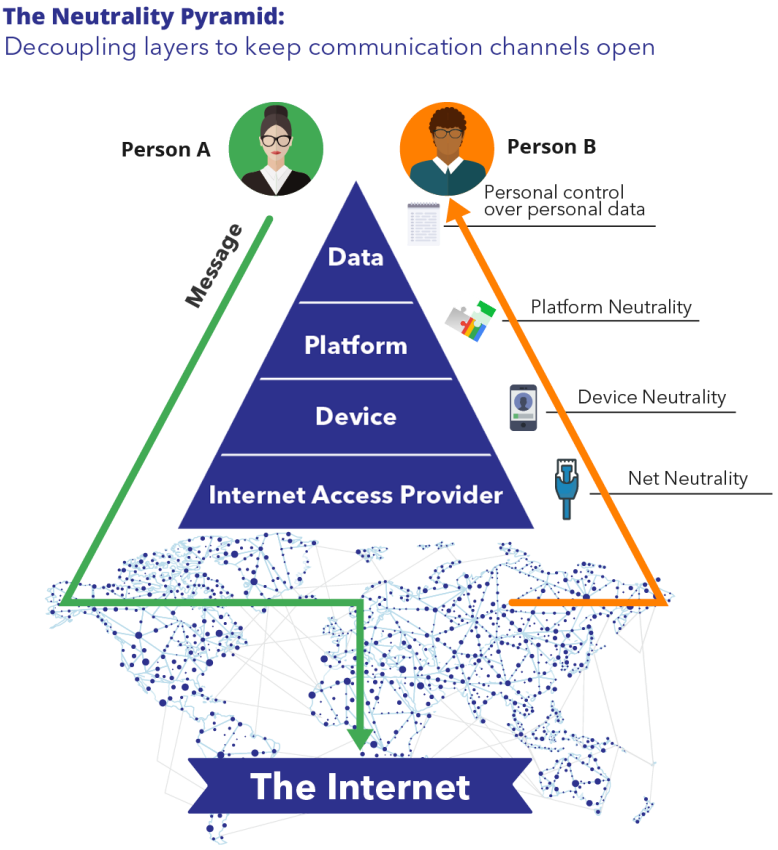
[63] K. Sabeel Rahman, "Infrastructural Regulation and the New Utilities," SSRN Scholarly Paper (Rochester, NY: Social Science Research Network, June 30, 2018), https://papers.ssrn.com/abstract=3205994.

[64] See for example, Rahman (Ibid)

[65] Lina M. Khan, "Amazon's Antitrust Paradox," *Yale* 126, no. 3 (2017), https://www.yalelawjournal.org/note/amazons-antitrust-paradox.

Leveraging the Neutrality Pyramid

Figure 9 — The Neutrality Pyramid



1. Seeing the pyramid. As individual citizens and responsible consumers, we need to be aware of exactly *who* each of these intermediaries are and *how* they perform as such. If they do not respect our rights, we should shift to more decent providers.[66] This requires coordinated activism and education.

2.Observing behaviors within each layer. As a community, we need to promote enforceable rules to ensure that each level of the pyramid will be kept from abusing its gatekeeping powers to stifle competition *within* its layer. This will require promoting and mandating open standards for interoperability.[67]

3.Observing dynamics between layers. As a community, we need to promote enforceable rules that ensure intermediaries do not illegitimately discriminate between the actors operating in the other layers of the pyramid. We should also rule out any further vertical integration and promote the structural separation of companies that have integrated across these layers over the past decades.[68] This will require a full battery of interconnected policies. Properly extending the net neutrality principles would require promoting greater interoperability and relying on antitrust enforcement to ensure it is effective. The development of public infrastructure and institutions is a necessary but separate component of this effort, which is addressed in further detail in this document as a secondary step.

[66] Though it is unreasonable to place too much of the burden on individuals, providing actionable steps is a way of respecting their agency. Governments should provide support by demanding actionable transparency from corporations, as they have done through labeling of food and drugs.
[67] Ian Brown, "Interoperability as a Tool for Competition Regulation" (LawArXiv, July 30, 2020), https://doi.org/10.31228/osf.io/fbvxd; Urs Gasser, "Interoperability in the Digital Ecosystem," SSRN Scholarly Paper (Rochester, NY: Social Science Research Network, July 6, 2015), https://doi.org/10.2139/ssrn.2639210; Alek Tarkowsky, Paul Keller, and Bartosz Paszcza, "Mandated and Generative Interoperability" (Shared Digital Europe, December 14, 2020), https://shared-digital.eu/mandated-and-generative-interoperability/.
[68] K. Sabeel Rahman, "Infrastructural Regulation and the New Utilities," SSRN Scholarly Paper (Rochester, NY: Social Science Research Network, June 30, 2018), https://papers.ssrn.com/abstract=3205994.

Having outlined a blueprint of this effort, it is important to note that a handful of avant-garde government officials, policymakers, activists and innovators have been working to make progress at each of these layers for years now.[69] So, where do things stand today?

Zooming into each layer: definitions, diagnostics and precedents

Net neutrality

Definition: The principle that internet service providers should not block, throttle, establish paid prioritization or any other mechanism to discriminate between people, content, applications, operating systems, based on reasons not established by law.[70][71]

What's the fuss? Given it is operating at the base of the pyramid, failure to ensure net neutrality could eventually lead to the collapse of the rest of the layers. In the US, where one might expect fierce competition between many players, most people have their choice restricted to one of two ISPs, meaning decisions these companies take regarding blocking, throttling and paid prioritization reverberate across the whole ecosystem.[72] Furthermore, as net neutrality rules have been weakened in the US during the Trump presidency,[73] the ISPs sought to increase their control over the content market (e.g., the AT&T and Time Warner merger and Comcast's attempt to purchase 21st Century Fox).[74] This can be seen as both a symptom and a cause of weaker neutrality principles. Without strong enforcement, ISPs could favor their own content over that of competitors.[75] A broader set of questions is emerging as content corporations expand into the global internet backbone infrastructure. Approximately 70% of the increase in global international bandwidth over the past five years can be attributed directly to content companies like Facebook,

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[69] For an overview of the changing discourse, see Primavera De Filippi, Juan Ortiz Freuler, and Joshua Tan, "The Declarations of Cyberspace," Berkman Klein Center Medium, November 30, 2020, https://medium.com/berkman-klein-center/the-declarations-of-cyberspace-ee0c4499de64;
For an overview of some of the actors pushing for decentralization, see "The Story of the Internet Is All about Layers," *The Economist*, June 28, 2018, https://www.economist.com/special-report/2018/06/28/the-story-of-the-internet-is-all-about-layers.

[70] For a more detailed account, see Christopher T. Marsden, *Network Neutrality: From Policy to Law to Regulation* (Manchester University Press, 2017), https://doi.org/10.26530/OAPEN_622853., and Barbara van Schewick, *Internet Architecture and Innovation* (Cambridge, United States: MIT Press, 2010), http://ebookcentral.proquest.com/lib/socal/detail.action?docID=3339149. Chap. 4.,

[71] Russell A. Newman, *The Paradoxes of Network Neutralities* (The MIT Press, 2019), https://doi.org/10.7551/mitpress/11040.001.0001.

[72] Jon Brodkin, "US Broadband: Still No ISP Choice for Many, Especially at Higher Speeds," Ars Technica, August 10, 2016, https://arstechnica.com/information-technology/2016/08/us-broadband-still-no-isp-choice-for-many-especially-at-higher-speeds/.

[73] "Net Neutrality Has Been Rolled Back — But It's Not Dead Yet," NPR.org, accessed December 21, 2020, https://www.npr.org/2018/06/11/618928905/net-neutrality-has-been-rolled-back-but-its-not-dead-yet.

[74] "Convergence in Media and Telecom in the Face of COVID-19," accessed December 21, 2020, https://www.robert-schuman.eu/en/european-issues/0559-convergence-in-media-and-telecom-in-the-face-of-covid-19.

[75] Kruakae Pothong, "Convergence, Internet, and Net Neutrality Policy: What the Future Holds for the Internet and Online Content," in *Second International Handbook of Internet Research*, ed. Jeremy Hunsinger, Matthew M. Allen, and Lisbeth Klastrup (Dordrecht: Springer Netherlands, 2020), 893–913, https://doi.org/10.1007/978-94-024-1555-1_20.

Google, Amazon and Microsoft, often in the shape of exclusive cables.[76] This process is likely going to cement the dominance of these corporations at a global level,[77] and underlines the need to establish treaties to both regulate net neutrality globally and oversee the effects of these massive cross-border data transfers to ensure value is distributed fairly.[78]

State of the game: Regulators in India,[79] EU[80] and elsewhere have held their ground in spite of the pressure exerted by internet service providers (ISPs). Dozens of countries now have enforceable rules that prohibit ISPs from undue discrimination between the content that travels through the network.[81]

Device neutrality

Definition: The principle that our computers (desktops, laptops and hand-held devices) and their operating environment should not be designed to prevent us from acquiring software through any channel, from any provider, under economic conditions determined by such software provider, and that we can install (or uninstall) on any computer, except when limitations to this freedom are mandated by law.[82]

What's the fuss? Device producers often limit the applications that can be run on devices. Furthermore, to make navigation easier, closed environments known as apps have flourished in mobile devices, which have surpassed desktops as the internet gateway.[83] By requiring apps to be installed through App Stores, under the control of those managing the operating systems, a choke point was created. Globally, the market is dominated by two corporations: Apple's iOS (28%) and Google's Android (71%).[84] The control these corporations exert over the operating system market has translated into a huge leverage over what apps are used. For example, by forcing device manufacturers to bundle their operating system with pre-installed and/or non-deletable sister apps, Apple and Google

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[76] Adam Satariano et al., "How the Internet Travels Across Oceans (Published 2019)," *The New York Times*, March 10, 2019, sec. Technology, https://www.nytimes.com/interactive/2019/03/10/technology/internet-cables-oceans.html, https://www.nytimes.com/interactive/2019/03/10/technology/internet-cables-oceans.html; "The Submarine Cable Industry: New Investment Opportunities and Key Trends," Analysys Mason, January 29, 2018, https://www.analysysmason.com/about-us/news/newsletter/submarine-cable-industry-jan2018/.
[77] Juan Ortiz Ortiz Freuler, "The Shape of the Internet: A Tale of Power & Money," Medium, August 7, 2020, https://juanof.medium.com/the-shape-of-the-internet-a-tale-of-power-money-a08d01065bc0.
[78] Juan Ortiz Freuler, "The Case for a Digital Non-Aligned Movement," *OpenDemocracy*, July 27, 2020, https://www.opendemocracy.net/en/oureconomy/case-digital-non-aligned-movement/.
[79] "India Adopts 'world's Strongest' Net Neutrality Norms," *BBC News*, July 12, 2018, sec. India, https://www.bbc.com/news/world-asia-india-44796436 .
[80] "Europe's Top Court Says Net Neutrality Rules Bar 'Zero Rating,'" *TechCrunch* (blog), accessed December 20, 2020, https://social.techcrunch.com/2020/09/15/europes-top-court-says-net-neutrality-rules-bar-zero-rating/.
[81] "Net Neutrality by Country," in *Wikipedia*, October 21, 2020, https://en.wikipedia.org/w/index.php?title=Net_neutrality_by_country&oldid=984666751 .
[82] Adapted from Stefano Quintarelli, "The case for device neutrality", in "Big Tech Regulation: Empowering the Many by Regulating the Few," September 1, 2019, https://www.thedigitalnewdeal.org/wp-content/uploads/Big-Tech-Regulation_DigitalNewDealFoundation.pdf. pg 24
[83] "Desktop vs Mobile Market Share Worldwide," StatCounter Global Stats, accessed January 17, 2021, https://gs.statcounter.com/platform-market-share/desktop-mobile/worldwide.
[84] "Mobile Operating System Market Share Worldwide," StatCounter Global Stats, accessed December 22, 2020, https://gs.statcounter.com/os-market-share/mobile/worldwide/#monthly-200901-202011.

effectively limit competition from existing and potential competitors.[85] In short, these companies are making their success in developing an effective operating system translate into benefits within what is objectively a separate market of apps.

State of the game: A (now former) Member of the Italian Parliament, computer scientist Stefano Quintarelli, has been promoting a bill that would grant users the right to use any software they like, including those from sources other than the official – vertically integrated – store.[86] The French telecom regulator has made recommendations in favor of the protection of device neutrality,[87] the EU Board of Regulators (BEREC) is expected to do so in 2021,[88] and the upcoming Digital Markets Act directive proposed by the European Commission has incorporated the concept. Even in South Korea, home to Samsung, regulators established non-binding recommendations for pre-installed apps to be removable.[89] Meanwhile, in Russia, Android has already been fined for continuing to pre-install its associated Google Apps,[90] and the outgoing chief of the Indian telecom's regulator has suggested device neutrality is necessary to keep the ecosystem lively.[91]

Platform neutrality

Definition: The principle that online platforms should not discriminate between people, content, applications or operating systems, except when such actions are mandated by law.

What's the fuss? Estimates place Google in control of 85% of the global market share of search.[92] Facebook, which in recent years purchased Instagram and Whatsapp, is considered to have a similar control over the market of social media advertising. By establishing themselves as gateways to content Google, Facebook (and others like WeChat) have created a central choke point through which they

[85] Lauren Feiner, "Google Sued by DOJ in Antitrust Case over Search Dominance," CNBC, October 20, 2020, https://www.cnbc.com/2020/10/20/doj-antitrust-lawsuit-against-google.html.
[86] Sebastien Soriano et al., "Big Tech Regulation: Empowering the Many by Regulating the Few," September 1, 2019, https://www.thedigitalnewdeal.org/wp-content/uploads/Big-Tech-Regulation_DigitalNewDealFoundation.pdf. pg 23
[87] Amba Uttara Kak and Jochai Ben-Avie, "ARCEP Report: 'Device Neutrality' and the Open Internet," Open Policy & Advocacy, accessed December 21, 2020, https://blog.mozilla.org/netpolicy/2018/05/29/arcep-report-device-neutrality.
[88] BEREC, "BEREC Report on the Outcome of the Public Consultation on the Draft BEREC Work Programme 2021," December 10, 2020, https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/9719-berec-report-on-the-outcome-of-the-public-consultation-on-the-draft-berec-work-programme-2021.pg 18
[89] Philip Iglauer, "South Korea to Make Pre-Installed Google Apps Removable for Android Phones," ZDNet, accessed December 22, 2020, https://www.zdnet.com/article/south-korea-to-make-pre-installed-google-apps-removable-for-android-phones/.
[90] "Russia Fines Google $6.8M for Android App Bundling," PCMAG, accessed December 22, 2020, https://www.pcmag.com/news/russia-fines-google-68m-for-android-app-bundling.
[91] "Neutrality Must for Platforms, App Stores and Devices, Says Outgoing TRAI Chief," *The Hindu*, September 27, 2020, sec. Industry, https://www.thehindu.com/business/Industry/neutrality-must-for-platforms-app-stores-and-devices-says-outgoing-trai-chief/article32707391.ece.
[92] "Search Engine Market Share Worldwide," Statista, accessed December 29, 2020, https://www.statista.com/statistics/216573/worldwide-market-share-of-search-engines/.

can influence the ideas and services made available to people.[93] In February 2021, the Australian Parliament moved forward with a bill that would force intermediaries like Facebook and Google to pay newspapers for their content. The outcome of this will impact how the news industry evolves, the way intermediary algorithms curate content, and the way the entangled web grows, all of which will require our close attention.

State of the game: The EU fined Google for unfair placement of their own comparison-shopping services among the search results.[94] The EU argued Google purposefully and illegitimately down-ranked competing services and granted its own competing service a prominent placement. India has recently followed this decision, and fined Google for the same behavior.[95] Similar allegations can be made regarding Apple's prioritization of its own apps in the Appstore,[96] which will most likely inform ongoing investigations in the EU and Australia regarding the fees apple charges app-makers, and the differential access it grants app competitors to elements like NFC and Bluetooth.[97]

Personal control over personal data

Definition: The right to decide what parts of your data are used by what parties at which point in time, and for what purpose. In ways that overlap with the concept of data portability, this includes the principle that people's data should be unlocked from its current silos through open standards and interoperability, except when mandated by law.

What's the fuss? The coupling of data storage and applications has allowed big companies to create artificial barriers to competition, such as limiting the ability to migrate contacts and information across platforms. Given network effects, this has allowed a handful of companies to gain control over an unhealthy portion of the ecosystem, with the corresponding control over public discourse that comes with it. Silos are socially inefficient but continue to exist because they allow big companies to ensure we won't leave their walled gardens. The excitement regarding data portability and personal control over personal data stems from the expectation that people will not only be able to transfer their data between the existing platforms, but rather that enabling seamless movement across

[93] Renata Ávila, Juan Ortiz Freuler, and Craig Fagan, "The Invisible Curation of Content: Facebook's News Feed and Our Information Diets," *Retrieved June* 28 (2018): 2019.
[94] EU, "European Union vs Google (Search - Shopping)," June 27, 2017, https://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=1_39740.
[95] Aditya Kalra Shah Aditi, "India's Antitrust Watchdog Fines Google for Abusing Dominant Position," *Reuters*, February 8, 2018, https://www.reuters.com/article/us-india-google-antitrust-idUSKBN1FS2AD.
[96] Jack Nicas and Keith Collins, "How Apple's Apps Topped Rivals in the App Store It Controls (Published 2019)," *The New York Times*, September 9, 2019, sec. Technology, https://www.nytimes.com/interactive/2019/09/09/technology/apple-app-store-competition.html.
[97] See Adriana Nunez, "Apple Pay's Control of NFC Technology Is Being Revisited by Global Antitrust Regulators," Business Insider, accessed December 22, 2020, https://www.businessinsider.com/apple-control-of-wallet-tech-faces-more-regulatory-scrutiny-2020-12. and Monica Chin, "Apple Comes out Swinging against Tile after EU Complaint," The Verge, May 29, 2020, https://www.theverge.com/2020/5/29/21274709/apple-tile-european-commission-eu-complaint-app-store-iphone-response.

providers will re-invigorate the ecosystem, triggering a new wave of innovation and technological developments.[98]

State of the game: On the one hand, new blockchain-powered platforms like Filecoin, Sia, Storj and MaidSafe seek to decentralize data storage by offering crypto-tokens to people willing to put their latent storage capacity on the market. On the other hand, big incumbent content corporations like Google, Microsoft, Apple and Facebook have been taking steps to cater to the increasing demands for greater interoperability through the Data Transfer Project,[99] aimed at creating an open standard that would enable people to move their photos, videos and more across platforms. In line with the efforts to provide a new way of dealing with data transfers, Tim Berners-Lee, the inventor of the Web, is taking this a step beyond through *Solid*.[100] Solid aims to decouple data from the applications that silo it today. If projects like Solid succeed, in the near future data will be stored and managed by the people who produce it, and applications will compete based on how they visualize the data and enhance user experience, not on their capacity to hoard data or lock users in.[101] An effective implementation would make platform neutrality less of a challenge: Switching between applications would be simple, since all the data they relied on is standardized across applications, and stored under the control of each person. You would be able to plug it into another application and move on as quickly as you do across tabs on a browser. The Flemish Government is already taking steps to provide its millions of citizens with their own Solid data pod.[102]

Throughout this section I outlined an agenda towards the redistribution of power across the network based on a set of defensive rules and barricades aimed at stopping incumbents from accumulating too much power or being able to leverage such powers arbitrarily when they effectively manage to harness it. However, this is not the full picture. Both the process of establishing exceptions to these bright-line rules as well as the question of what positive agenda we should set out for the net remain open. The next Step seeks to provide a rough compass towards answering these questions.

[98] Ruben Verborgh, “A Data Ecosystem Fosters Sustainable Innovation,” December 7, 2020, https://ruben.verborgh.org/blog/2020/12/07/a-data-ecosystem-fosters-sustainable-innovation/.
[99] “Facebook, Google and More Unite to Let You Transfer Data between Apps,” *TechCrunch* (blog), accessed January 17, 2021, https://social.techcrunch.com/2018/07/20/data-transfer-project/.
[100] “Homepage · Solid,” accessed December 19, 2020, https://solidproject.org/.
[101] Ruben Verborgh, “Paradigm Shifts for the Decentralized Web,” December 20, 2017, https://ruben.verborgh.org/blog/2017/12/20/paradigm-shifts-for-the-decentralized-web/.
[102] Ruben Verborgh, “A Data Ecosystem Fosters Sustainable Innovation,” December 7, 2020, https://ruben.verborgh.org/blog/2020/12/07/a-data-ecosystem-fosters-sustainable-innovation/.

Step 4 — Public deliberation towards a positive agenda

The sketch outlined in the previous step calls for restricting the ways in which current incumbents can act. That is, negative rules. The decision to move forward with such a framework is by no means a simple one. It implies difficult trade-offs that require much debate. At a basic level, a key question that remains open is what types of breaches to the neutrality principle should be considered permissible or desirable and thus be enshrined as such into regulations or laws. Tim Wu provides perhaps the most limited grounds for these exceptions, arguing that "a total ban on network discrimination, of course, would be counterproductive. Rather, we need distinguish between forbidden grounds of discrimination—those that distort secondary markets, and permissible grounds—those necessary to network administration and harm to the network."[103]

And yet, defining those permissible grounds opens up a wide range of options. To make progress we will need to overcome the paralyzing fear fueled by the grave asymmetry of information between us and the incumbent intermediaries. Any change to the status quo will imply trade-offs. Yet the status quo, as outlined throughout this report, is not perfect either. Action by democratic governments to reign in this power is long overdue. We have reached the point in which it is not just the public that is demanding this[104]: Over the past years a growing subset of the CEOs who run the key intermediaries themselves are calling for action.[105] In doing so, these CEOs are acknowledging they do not have the necessary legitimacy to exercise the power they have managed to amass over the years.[106] If anything, this context suggests that keeping the current rules in place should at least be the result of a renewed public debate, and not the result of our inability to make such debate take place.

In order to properly regulate exceptions to the Neutrality Pyramid and thus help realign future developments with the public interest, we will first need to scale back the power of these giants. When defining exactly what the exceptions should look like, and what effect they will have over the digital ecosystem, the challenge we face is that we know relatively little about this ecosystem.

Beyond the intrinsic complexities of tech, we have the added challenge of dealing with intermediaries who continuously stall conversations by strategically leveraging the opacity of their systems while arguing their tech is overly complex for outsiders to understand. They

[103] Tim Wu, "A Proposal for Network Neutrality," 2002., 11.
[104] See, for example Megan Brenan, "Views of Big Tech Worsen; Public Wants More Regulation," *Gallup.Com* (blog), February 18, 2021, https://news.gallup.com/poll/329666/views-big-tech-worsen-public-wants-regulation.aspx; Brookie Auxier, "How Americans See U.S. Tech Companies as Government Scrutiny Increases," *Pew Research Center* (blog), October 27, 2020, https://www.pewresearch.org/fact-tank/2020/10/27/how-americans-see-u-s-tech-companies-as-government-scrutiny-increases/.
[105] Mark Zuckerberg, "Big Tech Needs More Regulation," *About Facebook* (blog), February 18, 2020, https://about.fb.com/news/2020/02/big-tech-needs-more-regulation/.
[106] "Why We Terminated Daily Stormer," The Cloudflare Blog, August 16, 2017, https://blog.cloudflare.com/why-we-terminated-daily-stormer/; "Twitter Chief Says Trump Ban Was Right Decision but Sets 'Dangerous Precedent,'" the Guardian, January 14, 2021, http://www.theguardian.com/technology/2021/jan/13/trump-twitter-ban-jack-dorsey-chief-executive; Juan Ortiz Freuler, "Facebook Will Fail to Solve #FakeNews," Common Dreams, August 28, 2018, https://www.commondreams.org/views/2018/08/28/facebook-will-fail-solve-fakenews.

manage to execute this strategy effectively by pulling three levers: hiring the talent, locking-in the intelligence, and cracking down on internal resistance.

Big Tech's approach towards keeping its business inscrutable

1. **Hiring out the talent**: whereas market leaders used to be relatively small startups. Now incumbents buyout the startups and what used to be a crowd of free coders,[107] absorbing the people who understand the tech and could have offered users a competing medium,[108] as well as its critics.[109]
2. **Locking in the intelligence**: Big tech benefits from legislation and scale that makes external auditing it difficult,[110] and leverages and abuses non-disclosure agreements (NDAs) to keep internally available information about its technologies and business practices from being under proper public scrutiny.[111] In a recent survey including over ten thousand current tech employees in the US, 15% of them considered NDAs were silencing them.[112]
3. **Cracking down on internal resistance**: Big tech is actively pushing back against critics and workers' capacity to organize within their companies. This includes both the firing of individuals who raise concerns regarding certain tech developments[113] or unionization,[114] and even the development of surveillance technology capable of identifying individuals who might be discussing such goals.[115]

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[107] "List of Mergers and Acquisitions by Facebook," in *Wikipedia*, February 8, 2021, https://en.wikipedia.org/w/index.php?title=List_of_mergers_and_acquisitions_by_Facebook&oldid=1005652544; "List of Mergers and Acquisitions by Alphabet," in *Wikipedia*, January 18, 2021, https://en.wikipedia.org/w/index.php?title=List_of_mergers_and_acquisitions_by_Alphabet&oldid=1001247089;

[108] Tina Highfill, "Measuring the Small Business Economy" (U.S. Bureau of Economic Analysis, 2020). pg 19 . "Acqui-Hiring," in *Wikipedia*, September 9, 2020, https://en.wikipedia.org/w/index.php?title=Acqui-hiring&oldid=977548675. Erin Griffith, "Will Facebook Kill All Future Facebooks?," *Wired*, October 25, 2017, https://www.wired.com/story/facebooks-aggressive-moves-on-startups-threaten-innovation/; Shannon Bond, "'The Wrath Of Mark': 4 Takeaways From The Government's Case Against Facebook," *NPR.Org* (blog), December 2020, https://www.npr.org/2020/12/11/945234491/the-wrath-of-mark-takeaways-from-the-governments-case-against-facebook.

[109] Cyrus Farivar, "Facebook Just Hired a Handful of Its Toughest Privacy Critics," Ars Technica, January 30, 2019, https://arstechnica.com/tech-policy/2019/01/facebook-just-hired-a-handful-of-its-toughest-privacy-critics/.

[110] Jamie Williams, "D.C. Court: Accessing Public Information Is Not a Computer Crime," *Electronic Frontier Foundation* (blog), April 12, 2018, https://www.eff.org/deeplinks/2018/04/dc-court-accessing-public-information-not-computer-crime; Le Chen, Alan Mislove, and Christo Wilson, "Peeking Beneath the Hood of Uber," in *Proceedings of the 2015 Internet Measurement Conference*, IMC '15 (NY, USA: Association for Computing Machinery, 2015), 495–508, https://doi.org/10.1145/2815675.2815681; Renata Ávila, Juan Ortiz Freuler, and Craig Fagan, "The Invisible Curation of Content: Facebook's News Feed and Our Information Diets" (Web Foundation, 2018), https://webfoundation.org/research/the-invisible-curation-of-content-facebooks-news-feed-and-our-information-diets/.

[111] Jennifer Elias, "Google Contractors Allege Company Prevents Them from Whistleblowing, Writing Silicon Valley Novels," *CNBC*, October 1, 2020, sec. Technology, https://www.cnbc.com/2020/10/01/google-contractors-allege-ndas-violate-free-speech-laws.html; Spencer Woodman, "Exclusive: Amazon Makes Even Temporary Warehouse Workers Sign 18-Month Non-Competes," *The Verge*, March 26, 2015, https://www.theverge.com/2015/3/26/8280309/amazon-warehouse-jobs-exclusive-noncompete-contracts; Casey Newton, "The Secret Lives of Facebook Moderators in America," *The Verge*, February 25, 2019, https://www.theverge.com/2019/2/25/18229714/cognizant-facebook-content-moderator-interviews-trauma-working-conditions-arizona; Jeff John Roberts, "Why You Should Be Worried About Tech's Love Affair With NDAs," *Fortune*, April 29, 2019, https://fortune.com/2019/04/29/silicon-valley-nda/.

[112] Blind, "15 Percent of Tech Workers Silenced by an NDA," Medium, September 18, 2018, https://medium.com/@teamblind/15-percent-of-tech-workers-silenced-by-an-nda-738aab8ac0cb.

[113] Kim Lyons, "Timnit Gebru's Actual Paper May Explain Why Google Ejected Her," *The Verge*, December 5, 2020, https://www.theverge.com/2020/12/5/22155985/paper-timnit-gebru-fired-google-large-language-models-search-ai; "Facebook Fired An Employee Who Collected Evidence Of Right-Wing Pages Getting Preferential Treatment," BuzzFeed News, accessed February 4, 2021, https://www.buzzfeednews.com/article/craigsilverman/facebook-zuckerberg-what-if-trump-disputes-election-results.

[114] Katie Schoolov, "How Amazon Is Fighting Back against Workers' Increasing Efforts to Unionize," CNBC, August 22, 2019, https://www.cnbc.com/2019/08/22/how-amazon-is-fighting-back-against-workers-efforts-to-unionize.html; Shirin Ghaffary, "Google's Attempt to Shut down a Unionization Meeting Just Riled up Its Employees," Vox, October 21, 2019, https://www.vox.com/recode/2019/10/21/20924697/google-unionization-switzerland-zurich-syndicom-zooglers.

[115] Nandita Bose, "Amazon's Surveillance Can Boost Output and Possibly Limit Unions - Study," *Reuters*, September 1, 2020, https://www.reuters.com/article/amazon-com-workers-surveillance-idUSKBN25S3F2; "Amazon Reportedly Has Pinkerton Agents Surveil Workers Who Try To Form Unions," *NPR.Org*, accessed February 4, 2021, https://www.npr.org/2020/11/30/940196997/amazon-reportedly-has-pinkerton-agents-surveil-workers-who-try-to-form-unions.

Thus, policymakers and society at large are kept from understanding and being able to thoroughly discuss how the system *is* and *should be* developed. Control over key data allows these companies to play the role of the shadow masters in Plato's allegory of the cave. They get the chance to reveal only the portions of reality they find convenient, defining how the general public perceives the online space. Information scarcity is therefore not just the natural consequence of the internet's novelty – it is created artificially and for strategic purposes: to shape public opinion regarding how it works today.[116]

Given the closed nature of these companies and the lack of publicly available information regarding their operations, it would be useful to set up public committees tasked with assessing the economic and political risks and impacts the centralization process has had on the flow of ideas, innovation and competition, and creating processes and rules to push back on the abuse of the three levers outlined above. Public debate would certainly benefit from the detailed map of this space that could emerge from such actions.[117]

The role of antitrust probes in fostering quality public debate

Given the difficulty in monitoring and reacting to cases of discrimination before they destroy a market or inhibit a conversation,[118] fragmenting these companies to ensure structural separation increasingly seems like a reasonable way of weakening or eliminating incentives for corporations to breach the neutrality rules.[119]

In this sense, the ongoing antitrust probes taking place across the globe are an interesting first step in enabling a more robust public debate.[120] Break-ups could be crucial to ensure information is available for the public debate. That is, once more actors operate in the market, they will have more incentives to cooperate with each other and with regulators as a means to ensure quality of service to their customers. Thickening the market's long tail (i.e., taking action to ensure the number and market share of small players increases) thus increases the incentives and probability that these actors coordinate, and with it the

[116] Juan Ortiz Freuler, "Three Perspectives on the Relationship between the Internet and Democracy," *Medium* (blog), December 18, 2018, https://juanof.medium.com/is-the-internet-to-blame-for-the-rise-of-authoritarianism-3aad0b955f90.
[117] Juan Ortiz Freuler, "Three Perspectives on the Relationship between the Internet and Democracy," *Medium* (blog), December 18, 2018, https://juanof.medium.com/is-the-internet-to-blame-for-the-rise-of-authoritarianism-3aad0b955f90.
[118] "Power interprets regulatory resistance as damage and routes around it", Julie E. Cohen, *Between Truth and Power: The Legal Constructions of Informational Capitalism*, *Between Truth and Power* (Oxford University Press), accessed February 15, 2021, https://oxford-universitypressscholarship-com.libproxy1.usc.edu/view/10.1093/oso/9780190246693.001.0001/oso-9780190246693. p. 218. See also p. 179
[119] See, for example "EU Auditors: Antitrust Probes Too Slow to Curb Tech Giants," AP NEWS, November 19, 2020, https://apnews.com/article/europe-e509a0e4e63abc1c24e183ae3be8b370 . Thibault Larger, Mark Scott, and Kayali, "Inside the EU's Divisions on How to Go after Big Tech," POLITICO, December 14, 2020, https://www.politico.eu/article/margrethe-vestager-thierry-breton-europe-big-tech-regulation-digital-services-markets-act/ . Tim Wu, "Tech Dominance and the Policeman at the Elbow," *Columbia Public Law Research Paper*, no. 14–623 (2019).
[120] See, for example Lauren Feiner, "Google Sued by DOJ in Antitrust Case over Search Dominance," CNBC, October 20, 2020, https://www.cnbc.com/2020/10/20/doj-antitrust-lawsuit-against-google.html; Diane Bartz, "Factbox: Lawsuits Pile up as U.S. Tackles Big Tech's Market Dominance," *Reuters*, December 9, 2020, https://www.reuters.com/article/us-tech-antitrust-facebook-factbox-idUSKBN28J2XR; Jon Swartz, "Big Tech Has an Antitrust Target on Its Back, and It Is Only Going to Get Bigger," MarketWatch, accessed January 18, 2021, https://www.marketwatch.com/story/big-techs-antitrust-woes-will-continue-to-grow-but-will-it-actually-matter-11607628425; Elettra Bietti, "Is the Goal of Antitrust Enforcement a Competitive Digital Economy or a Different Digital Ecosystem?," January 27, 2021, https://www.adalovelaceinstitute.org/blog/antitrust-enforcement-competitive-digital-economy-digital-ecosystem/.

possibility of greater information sharing. The broader scope of actors is also likely going to create a more plural environment, with companies that have different perspectives on the role of tech discussing why their alternatives are superior according to different value systems and measurable metrics, thus organically pushing the conversation around values to the foreground. Lastly, since it often seems that the current incumbents are *too big to care*,[121] the existence of smaller companies is likely going to increase their willingness to sit at the table with government regulators and public representatives from across the globe.

As we scale back the power of these gatekeepers and ensure the actors operating at each layer disclose more detailed information regarding how the digital ecosystem works, we will be able to rely on that broader public understanding of cyberspace to advance the debates around permissible breaches to the Neutrality Pyramid.

As regulators and the people understand that any action or omission impacts on the digital ecosystem, and through it, society at large, we will have to frame the debate in terms of a positive agenda: What are the broader societal goals we expect to collectively achieve, and what role should the internet play in achieving such agenda? As such, we will eventually have to create space to debate the question of *value*.[122] This question can be further broken down into five key questions:

1. How do we define value?
2. How will we fund the system through which value is created and distributed?
3. How will we manage it?
4. Who will have access to such value?
5. How will we periodically assess and reform the system?

The answer to these questions should emerge from thorough public debate. One that incorporates the broadest possible range of stakeholders, interests and perspectives. The aim of this debate should not be to resolve all conflicts, but to ensure everyone feels they have had a fair chance of being heard, that their rights will be respected, and that the outcome distributes the costs and benefits fairly. In short, the process should aim at ensuring the rules that emerge from such a process are considered legitimate by the people it will impact. This will be the key to regaining public trust in the digital space.

As a mere participant in such debate, I feel compelled to take this opportunity to call for a radical shift: Our information systems should be geared towards solving the big challenges we face as humans on this planet, instead of narrow goals of profit, such as the optimization of ad-targeting that fuels our current system. At a collective level, information systems should be geared towards helping us understand how to mitigate, adapt and distribute the impacts of climate change. At an individual level, information systems should help people flourish, by creating a state of abundance that guarantees people's basic needs will be met,

[121] Ian Curran, "'Too Big to Care': 2020 Was the Year That Europe Got Serious about Tackling Big Tech," MSN, December 31, 2020, https://www.msn.com/en-ie/news/other/too-big-to-care-2020-was-the-year-that-europe-got-serious-about-tackling-big-tech/ar-BB1co5Eo; "Zuckerberg's Refusal to Testify before UK MPs 'Absolutely Astonishing,'" the Guardian, March 27, 2018, http://www.theguardian.com/technology/2018/mar/27/facebook-mark-zuckerberg-declines-to-appear-before-uk-fake-news-inquiry-mps.

[122] Juan Ortiz Freuler, "The Case for a Digital Non-Aligned Movement," openDemocracy, July 27, 2020, https://www.opendemocracy.net/en/oureconomy/case-digital-non-aligned-movement/.

freeing up mental space so they can explore and understand *who* they are, and providing the people with tools to engage meaningfully with other individuals and collectives in this journey.

The role of public infrastructure in helping us achieve public interest goals

Loose market guidance, of the type tailored exceptions to the neutrality principles, can achieve, is unlikely going to realign our tech with the public interest by itself. The goal of these principles is merely to constrain the power of big private actors to ensure baseline protections for our rights, and promote information sharing that can fuel a robust public debate.

Over the past centuries we have seen the state take an active role in developing and maintaining key infrastructure and services, such as justice, healthcare, education, a postal service and even public parks to ensure the people had a decent standard of living and could acquire the necessary tools and support to flourish and achieve their own personal projects. As the digital environment continues to grow and increase its relevance in people's lives, public representatives across the world should forward the debate regarding what the equivalent of these key infrastructures and services will look like in the 21st century, and build them.[123] As Julie Cohen states, "It is too soon to say precisely what a regulatory state optimized for the era of informational capitalism ought to look like, but it is nonetheless essential to understand current regulatory disputes as contests over that question."[124] Continuing to delay public debate and action will only contribute to the perception that governments are losing their relevance, and that democracy has been devalued.[125]

[123] See for example Evgeny Morozov, "Digital Socialism?," *New Left Review* 116–117 (June 2019), https://newleftreview.org/issues/ii116/articles/evgeny-morozov-digital-socialism; Paul Keller and Alek Tarkowsky, "Interoperability with a Purpose," *A Shared Digital Europe* (blog), December 14, 2020, https://shared-digital.eu/interoperability-with-a-purpose/; Ethan Zuckerman, "The Case for Digital Public Infrastructure" (Knight Columbia, January 17, 2020), https://s3.amazonaws.com/kfai-documents/documents/7f5fdaa8d0/Zuckerman-1.17.19-FINAL-.pdf;
[124] Julie E. Cohen, *Between Truth and Power: The Legal Constructions of Informational Capitalism*, *Between Truth and Power* (Oxford University Press), accessed February 15, 2021, https://oxford-universitypressscholarship-com.libproxy1.usc.edu/view/10.1093/oso/9780190246693.001.0001/oso-9780190246693. p. 200
[125] Kisha Stokes, "Edelman Trust Barometer," 2020. Available at https://cdn2.hubspot.net/hubfs/440941/Trust%20Barometer%202020/2020%20Edelman%20Trust%20Barometer%20Global%20Report.pdf?utm_campaign=Global:%20Trust%20Barometer%202020&utm_source=Website

Conclusion

As a result of the centralization of the online environment, a handful of companies today have exclusive access to the tower from which the full tapestry of threads created by our online activity becomes fully visible. This handful of companies have privileged access to the knowledge that emerges from our collective work on the web, and a privileged position through which to define what knowledge is produced, prioritized and consumed.[126]

This report outlines four steps we need to take in order to ensure we redistribute power over the net, and increasingly democratize governance over it, in order to ensure it is a force of good. Yet, we should not think of this process as one that will be straightforward. Beyond the resistance posed by the tech sector itself, at a local level we face the weakening of governments across the globe and the perception that the social fabric has been torn beyond repair. At a global level, growing nationalism and a cold war discourse risks alienating our debates regarding the digital ecosystem by making the military and defense framings more prominent and undermining our ability to achieve the levels of planetary coordination our times demand.

It seems that there is a growing gap between where the power lies and where the institutions of accountability operate. Such institutions, both local and global, have become incapable of enabling democratically elected leaders to deliver on their campaign promises, and organizations like the UN to execute their programs.

This failure will continue to fuel social and international tensions, undermining trust in our democracies and global governance mechanisms, and boosting the ranks of extremist leaders. We need our institutions to interpret these tensions as red flags and urgently work in building and rebuilding institutions that are fit for the purpose.

This gap between power and institutions is not exclusive to the internet, yet the online space is where it is most visible. Given the pace at which our lives are migrating towards the digital realm, perhaps it is the space where this dynamic requires our most urgent attention.

If our current institutions of government fail to ensure that the ongoing technological revolution puts people first, these institutions will sooner or later be rendered irrelevant. The stakes are high, and change will require a coordinated effort from a broad range of actors. It will require each of us to take steps towards greater solidarity. I trust the framework outlined in this document can serve as a rough compass to coordinate progress in that direction.

[126] Juan Ortiz Freuler, “The Case for a Digital Non-Aligned Movement,” *OpenDemocracy*, July 27, 2020, https://www.opendemocracy.net/en/oureconomy/case-digital-non-aligned-movement/.